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QUARTERLY REVIEW of OTORHINOLARYNGOLOGY and BRONCHO-ESOPHAGOLOGY

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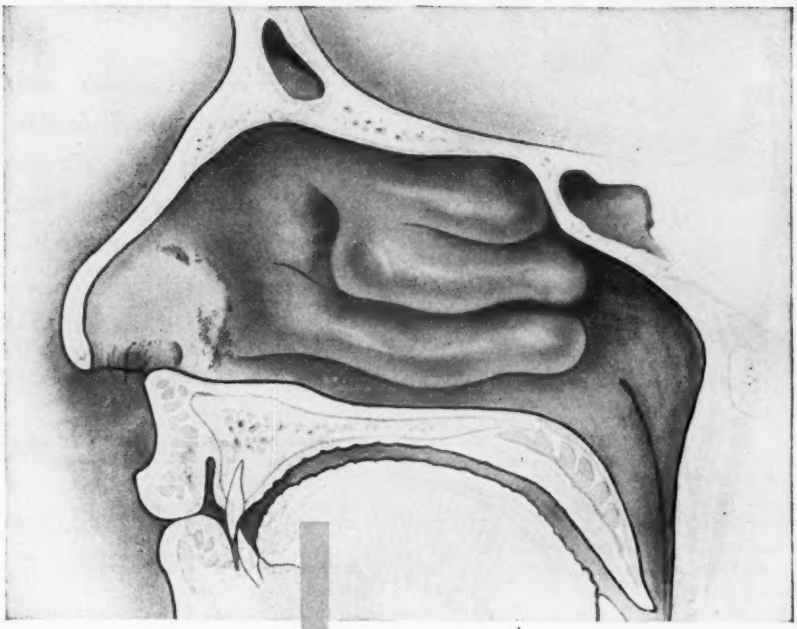

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OTOLOGY

1. Audiology

Masking as an Aid in Audiometry in Children. *Maurice Saltzman and Matthew S. Ersner, Temple University School of Medicine, Philadelphia, Pa.* Laryngoscope 58:1127-30, October 1948.

Audiometry in children under 5 years is usually unreliable since they lack the capacity for concentration and acknowledge hearing sound only when it pounds on the ear. A problem arises in children of the age group of 6 to 10 years occasionally. A case with this type of difficulty was encountered in a 9 year old girl who was found to have a severe hearing defect in the course of routine audiometric study at public school. Due to a basic psychoneurotic make-up, the child seized upon this supposed shortcoming as a pretense to elicit sympathy and began playing the role of a deaf girl. In an audiologic study wide discrepancy was found between the level of the patient's audiogram and the patient's speech hearing capacity which was practically normal. There was also no speech defect present. Malingering was ruled out by the fact that repeated audiograms done by several testers showed identical curves. The age of the girl argued against a deliberate simulation. It occurred to us that a child of this age might not have learned yet to discriminate a pure tone unless it is sufficiently loud to compel attention. However, by applying a thermal noise to one ear, a sense of total absence of sound in the other ear is created. The empty ear becomes alerted to sounds close to its threshold of hearing. When noise is applied to one ear and a pure tone is presented to the other ear, a contrasting effect is brought about and the brain is impressed more readily by contrasting sensations. In logic and rhetoric, ideas are emphasized by contrast. A child, being impressionistic, is most suitable for learning by this method. Masking constitutes a great aid in the indoctrination of a child in pure tone hearing. 2 figures.—*Author's abstract.*

Audiometric Studies of the Residual Hearing of Pupils of Rio de Janeiro National Institute for the Deaf. *Armando Paiva Lacerda, Instituto Nacional de Surdes Mudos do Rio de Janeiro and Alfredo Eugenio Vervloet, Rio de Janeiro, Brazil.* Arch. Otolaryng. 47:239-63; 264-79, March 1948.

I. AUDITORY ACUITY OF DEAF CHILDREN.

The hearing of 241 children was examined with respect to both air and bone conduction. The ages ranged from 7 to 21 years. The audiograms of 200 children who gave satisfactory responses served as the basis for a statistical analysis which was undertaken for scientific purposes. The authors have obtained 379 threshold curves by air conduction and 233 by bone conduction. Charts made from the statistical data show air conduction curves longer than bone conduction curves. Noticeable is a greater loss of hearing for high tones by both air and bone conduction. The charts show that in the majority of these children the loss of hearing is bilateral and approximately equal in the two ears by both air and bone conduction. It was verified that 97.5 per cent of the children responded to at least one tonal frequency in one ear when tested by air conduction. Only in 2.5 per cent of the audiograms was no response to auditory stimulation registered in either air or bone conduction trials. Seventy per cent of the children examined were said to have been born deaf. The percentage of those who presumably acquired the deafness after birth is about 30 per cent. The differences among the children's audiograms of both groups are not regarded as significant. No significant difference in the threshold curves of the two sexes was noted. There is no apparent association between etiologic factors and the audiometric curves. The audiometric curves give a picture of the functional disturbance of the perceptive type of deafness. This is observed commonly in connection with pathologic mechanisms resulting from damage of the auditory nerve or of the hair cells of the organ of Corti or from a process involving them. A slight and transitory perception which the authors found unrecordable was noticed mainly in tests of bone conduction. Because of its peculiar behavior they named this special auditory phenomenon vanishing perception of audiometric tones. It may be looked on as an audiometric sign of an inner ear nerve lesion which is observed in an advanced stage of deafness of the perceptive type, particularly in deafmutism. The evanescent sensation is the last stage prior to the complete loss of sensation of the audiometric tone either by bone or by air conduction. Vanishing perception, so closely related to poor functioning of the cochlea and the auditory nerve, is a consequence of anatomic, physiologic and pathologic factors. It would be regarded as a form of auditory fatigue, essentially sensorial and connected with the degeneration of the nerve elements of the ear. Contrary to the physiologic auditory fatigue, the fugitive perception, when it appears at certain frequencies of the audiometric range did not affect hearing of any other frequency which was recorded. It is supposed to be connected with specific cochlear reaction verified at levels corresponding to the fatiguing frequencies, at which the

excitability is in a weak stage. 14 references. 5 tables. 6 charts.—*Author's abstract.*

I. STUDY OF THE PROGRESS OF THE IMPAIRMENT OF THE CHILDREN'S HEARING.

Ninety-five children underwent subsequent audiometric tests. The time between tests ranged from one to five years. When the later audiograms were compared with the early ones, significant changes were noticed in 43 cases. They may be outlined: falling off of the marks or thresholds and disappearance of some of those previously recorded, sometimes preceded by the fugitive perception. That is an evidence of progress of the impairment. In the remaining 52 cases no change was observed. In these cases the pupils attended the auricular classes or were under active specific treatment. On the basis of the analysis of all the findings in these cases we may state that no apparent association was found between the progress of the impairment and the stated causes of the congenital or the acquired deafness. No constant relation was established between the amount of the loss and the time elapsed between tests. The general features of the advancing process are: an early marked impairment of perception of bone-conducted frequencies and a tendency toward a greater loss of perception of high frequencies whether conducted by air or by bone. The displacement of tone gaps and tone islands of Bezold observed in some audiograms of the first tests had become more characteristic during the progress of the impairment. This was the aspect taken by the auditory curves in cases in which the process was advancing in an uneven fashion in some tonal bands of the audiometric field. The tone gaps and the tone islands formed by the development of the deafness, together with the evanescent perception, may be regarded as signs associated with the progress of impairment. The process may be divided into four main phases according to the degree of the loss of hearing. Different factors, not well established, influence these successive phases by speeding up the process, slowing it down or holding it stationary. These different angles of the problem are enough to warrant further research and a more accurate study of this subject. The first results were restricted to the comparative study of the auditory loss and its characteristics by air and bone conduction tests in the diagnosis of this type of deafness but they have suggested new experiments which might be undertaken in the measurement of auditory acuity and further clinical studies which might bring a new source of light into the pedagogy and the therapeutics of deaf children. 2 references. 8 charts.—*Author's abstract.*

Emotional Aspects of Hearing Loss. *Peter H. Knapp, Boston University School of Medicine, Boston, Mass.* Psychosom. Med. 10:203-22, July-Aug. 1948.

Deafness, though traditionally linked with personality abnormality, has seldom been described from the point of view of contemporary psychiatry. Opportunity for this arose at Deshon General Hospital, an Army Aural

Rehabilitation Center during World War II, where 510 cases of hearing loss were seen. Most of the patients were not totally deaf but hard of hearing to some degree. The various levels of loss presented special problems in adjustment and difficulty in measuring those levels assumed importance because of the prevalence of psychogenic disability. Pure tone audiograms, speech reception thresholds and an additional technic of measuring speech reception against a background of noise—all proved useful but were limited because of ultimate dependence on subjective report of the patients. To try to ascertain objectively actual acoustic loss, the galvanic skin response was used. While an instrument measured change in skin resistance of the palms, speech was introduced to subjects through a voice attenuator under sound proof conditions. There was no sharp separation of cases into functional and organic illness but a spectrum of cases between the extreme of organic and psychogenic deafness. On this spectrum it was possible to group psychiatric patients according to the predominant relationship of emotional to acoustic disability. Some cases showed no demonstrable interrelationship. The incidence of such cases was 3.7 per cent of admission to the hearing service in a six month period in 1945. Some patients, who tended to have more severe and more chronic loss, reacted neurotically to the effects of hearing loss, which appeared to promote intellectual, instinctive and especially interpersonal security. Individuals with hearing loss resembled a minority group on whom the social environment forces certain behavior patterns. These give them an apparent homogeneity but not necessarily any inner identity. Although ideas of reference were found in about one-fourth of this group, they often appeared practical and realistic. We were unable to find in this young, mildly deafened population any genuine paranoid reactions. More significant seemed to be the way these men defended themselves against insecurity—by overcompensated outgoing activity, denial of hearing loss, withdrawal from society, displacement of anxiety or exploitation of hearing loss. The incidence of such cases was 5.5 per cent of total admissions in the six month period at the army center. Other cases went further in part welcomed their disability and had a mixture of struggle against loss and measurable psychogenic increase in it. Such mixed reactions comprised 2.8 per cent of admissions during the six months. A final group had primarily psychogenic deafness. They varied from mild military neurotics to a group of seriously disturbed individuals, who appeared to have deep desires for isolation and silence. Selection of the ear and hearing for neurotic involvement appeared to depend at times on the presence of mild otologic disease or exposure to acoustic trauma. At other times identification mechanisms were prominent. The hypothesis also arose that in some of them there had been actual sensitization of the function of hearing. Many had strict consciences and recollection of the words which had gone into forming those. Hearing loss seemed designed to exclude voices of a particular domineering parental figure in some. At the same time there seemed to have been investment of hearing with erotic energy, in terms of curiosity, pride or esthetic enjoyment. Thus hearing loss could be understood as a neurotic compromise in which sacri-

fice of a treasured part of the personality was the price paid for becoming "deaf to the voice of conscience". The incidence of psychogenic reactions was 5.7 per cent in the six month period. Many cases had a history extending prior to service. Similar dynamic mechanisms have been described in 1 case in the psychoanalytic literature (*Foxe, A. N.: Psychoanalysis of case of deafness.* Psychiat. Quart. 15:438-49, *July* 1941). The existence of this syndrome in civil life assumes particular importance in connection with selection and evaluation of cases for fenestration. The consultation rate in our army center steadily increased until the psychiatrist began to function as a member of the hearing service. The discovery of mixed and psychogenic cases showed a parallel steady increase, until their proportion approached that described from Hoff General Hospital. There is need for still further refinement of diagnostic technics and for further study of the problems of hearing in relation to language formation and interpersonal relations and, possibly, even certain ear diseases of unknown etiology, particularly otosclerosis.

The conclusions were: (1) galvanic skin response is a valuable adjunct in the diagnosis of hearing cases; (2) population of this study showed no one psychology of deafness but rather the psychology of many individuals defending themselves in a variety of ways against a handicap which led primarily to difficulty in communication; (3) psychogenic hearing loss, by itself, and in cooperation with organic loss, was a significant entity important in the diagnosis and treatment of auraly handicapped patients. 21 references. 2 figures.—*Author's abstract.*

Otosclerosis in Childhood. *William McKenzie, London, England.* J. Laryng. & Otol. 62:661-70, November 1948.

Otosclerosis in childhood is unusual and the younger the child the more difficult is the diagnosis. The history depends on the accuracy of the parents' observations. A family history of deafness can do no more than suggest otosclerosis, while a history of repeated deafness with colds may be caused by infected adenoids and it is no evidence of otosclerosis. A child who has been obviously deaf for several years and who has become deafer without earache or otorrhea, should be suspected of otosclerosis. In taking the history from the parent, the child should be watched. If he can hear, he will show quite clearly that he is listening and a few simple questions can be asked of him. A child who speaks normally, and with a local accent, has not been deaf in infancy. This test excludes the majority of cases of perceptive deafness. Under 7 years of age, accurate tuning fork tests are not possible. A negative Rinne for 256 and 512 cycle tuning forks on several occasions, would suggest otosclerosis, especially if the forks are heard normally in the center of the forehead. If a child who is deaf to ordinary conversation speaks normally and understands speech with a valve amplifier, the diagnosis is a conductive deafness. The air conduction audiogram shows a characteristic curve. The loss is greater than occurs usually in deafness from adenoids, and the shape corresponds to that expected in young people with otosclerosis. Repeated audiographs every three months

may clarify the diagnosis. Deafness from adenoids may disappear spontaneously but deafness from otosclerosis will not improve. It is easier to diagnose deafness from adenoids than deafness from otosclerosis. The deafness of the former is less profound; the loss is seldom more than 35 db. at any frequency and the loss for hearing to high notes is equal to the loss to low notes. Removal of the adenoids restores the hearing in four to six weeks. If there is suspicion of adenoid infection, the nasopharynx must be examined under an anesthetic. The case histories of 3 children with otosclerosis are recorded. The cases were treated by fenestration and the hearing improved in each instance. It is too early to know whether this improvement will last. The importance of learning to lipread should be impressed on the parents, whether fenestration is contemplated or not. 1 reference. 9 figures.

Loss of Speech Due to Meningitic Deafness. *Charles E. Kinney, Cleveland, O.* Arch. Otolaryng. 47:303-309, March 1948.

Twenty-nine cases of total deafness caused by meningitis are considered. None of the patients had a family history of deafness. The age incidence was from 10 months to 26 years but 19 patients had meningitis within the first three years of life. Eight of the 10 youngest children recovered consciousness without speech, although 5 of the 8 could say five to ten words before their illness. The next 5 older children had a distinct voice alteration when they regained consciousness; all lost their speech within eight weeks. Three of the oldest patients never lost their speech completely. In instances of total deafness the loss of speech followed a fairly definite pattern; when a person with normal hearing and normal speech became completely deaf, he tended to lose his speech to an extent directly proportional to the length of time that he had speech. In these cases it is necessary to begin speech training at once. This is especially true in younger patients, since their memory patterns are not firmly established. In 15 cases the condition was caused by meningococci; in 3, Hemophilus influenzae; in 2, pneumococci; in 1, beta streptococci. Two patients who had total loss of hearing directly after the meningitis, and who recovered some hearing, had influenzal meningitis. Three of 5 children tested could appreciate without other warning a twin engine plane flying as high as 1 mile. All other hearing sensations were gone. With one exception, the 21 youngest children in this series seemed to retain a similar ability. This phenomenon is possibly caused by subsonic vibrations and may lead to the development of improved methods of speech training for deaf children. 3 references. 2 tables. 1 figure.

Head Noises of Muscular Origin. Audible or Objective Tinnitus. *Hugh W. Schwartz, Halifax, N. S., Canada.* J. Laryng. & Otol. 62:746-51, December 1948.

A 32 year old male complained of headaches and a sound resembling the tick of an alarm clock in both ears. These symptoms had originated three years previously. On auscultation over the head, there was a rhyth-

mic noise, about 87/sec. There was rhythmic contraction of the temporal and masseter muscles with gritting of the teeth, rhythmic contraction of the orbicularis oculi when the eyes were shut and rhythmic movements of the palate and tongue when the mouth was open. It was thought that the clicking in the ears was made voluntarily by the patient and that he controlled it for short intervals. It disappeared when he was asleep. The patient was thought to have feigned disability because he desired to leave a job as a coal miner and could be released only if ill. Suggestion was used in the form of pennies placed over both mastoids. The patient was told that the copper would make the clicking cease, which produced results overnight. The discharge diagnosis was tic of the levator palati muscles of psychogenic origin. Almost two years later the man was reexamined. He stated that headaches occurred if he was exposed to noise and that the ticking had never been relieved, although observers were unable to hear it. A tick was found to be present with a rate of 100 and a variable loudness. The tick was occasionally audible when the patient was asleep. The case is unusual among cases of this kind in having muscles involved besides those of the eustachian tube and soft palate. The tinnitus produced no inconvenience and a change of the patient's occupation did not cure it. It is possible that the tick does not cease during sleep but only decreases in intensity. The impulses appear to reach their destination by way of the motor division of the trigeminus, the facial and the hypoglossus. The vagus may be involved. Since no organic cause was established, an emotional basis must be searched for. The number of cases reported of audible or objective tinnitus not associated with the circulation appear to be few and far between. 5 references.

The Estimation of Hearing Losses for Purposes of the Adjudication of Disability Claims. *A. E. Lundon, Montreal, Que. Canada.* Canad. M. A. J. 59:18-21, July 1948.

The purpose of this article is to stimulate interest in the estimation of hearing losses in industries and occupations by the only methods which are at present known to be accurate. the conclusions reached are based on an examination of 24,740 subjects. The estimation of hearing losses by the use of the conversational voice tests consists of too many variable factors to be of any real value. The most accurate method known is that of the recorded human voice, heard in a soundproof room and with the voice from the loud speaker monitored to 1 db. and ranging up to 80 or 100 db. above the normal threshold. The apparatus used by the author is that developed by the Bell Telephone Laboratories. With this instrument the sentences spoken consist of certain key words which are essential to the correct repetition of the sentence. The accuracy of reception by the patient is determined by his correct repetition of these sentences. The author believes that before employing applicants for industry and before accpeting recruits for the armed forces the hearing loss should be determined by audiometric methods. 7 references.

Medical Problems in Fitting Modern Hearing Aids. *W. J. Pothoven, Groningen, The Netherlands.* Canad. M. A. J. 59:544-46, December 1948.

Fitting hearing aids ought to be based on a medical diagnosis. It is not advisable to leave this to the laity. In cases of recruitment deafness special care should be taken to meet the requirements of this special type of inner ear deafness in order to avoid damage to the patients hearing function. In such cases hearing aids with automatic volume control are preferable over aids with a device of peak clipping. Air conduction fitting has many advantages over bone conduction fitting. Only in about 10 per cent is bone conduction fitting necessary. Bone conduction fitting is used only in these patients, who cannot stand an air conduction fitting, mostly due to a discharging chronic otitis or malformation of the outer canal. Wearable hearing aids with a flat response or a response, emphasizing the higher frequencies give the best results in all types of deafness. Only a few types of hearing aids will be necessary in the future. This will reduce the cost of manufacture and economize repair. Two conditions are essential in fitting hearing aids: (1) condition of the outer canal; (2) recruitment factor. For adequate advice about the medical or surgical treatment of his deafness, a patient should see his otologist before buying a hearing aid. 5 references.—*Author's abstract.*

Hearing Deficiencies Caused by Carbon Monoxide (Generator-Gas). *Jaakko S. Lumio, Oto-Laryngological Clinic, University of Helsinki, Helsinki, Finland.* Acta oto-laryng. Suppl. 71, 1948.

Of 700 patients 263 suffered from chronic carbon monoxide poisoning, 401 had been exposed to carbon monoxide in their working place though no symptoms of chronic carbon monoxide poisoning could be established with certainty and 36 had been exposed to other gases. Hearing deficiencies were present in 78.3 per cent of the patients with chronic carbon monoxide poisoning. The corresponding percentage in cases where there were no definite, objective signs of poisoning was only 26.7 per cent. The majority of the patients had a similar so-called typical hearing deficiency; the threshold of hearing was normal, as was the beginning of the audiogram up to 1,000 Hz. Between 1,000 to 2,000 Hz. the curve dropped more or less steeply but evenly. Thus the decibel figure denoting the corresponding hearing loss was, when the vibration rate increased, larger and the upper limit of the hearing was lower than usual. A typical hearing deficiency was noted in 67.7 per cent of the patients not so affected. Of the patients with chronic carbon monoxide poisoning 47.9 per cent complained of impairment of hearing during the time they were exposed to carbon monoxide but audiogram disclosed changes in 78.3 per cent of the patients suffering from poisoning. By testing the hearing for speech and for whisper, impaired hearing was found in 16.0 per cent only. After excluding all other etiologic factors except carbon monoxide (presbyacusis, work in noise, craniocerebral injuries, ear diseases, general infectious diseases etc.) Typical hearing losses remained in 44.5 per cent of the patients with chronic carbon monoxide poisoning but in only 5.2 per cent of those

in whom no symptoms of poisoning were found. The follow-up examinations disclosed that typical hearing losses improved only slightly, or not at all. An improvement of hearing was found in only 26.7 per cent of the cases and it was always slight. Hearing returned to normal in 10.7 per cent of the cases having a slight deficiency. The hearing of the patients treated with vitamin B1 did not improve more than that of the patients so treated. Common features noticed were: The deficiency was of the bilateral inner ear type. This improved slightly or not at all and involved chiefly the upper tones. Some facts indicate that a typical hearing deficiency may appear at the initial stage of chronic carbon monoxide poisoning when actual vestibular symptoms were not present. The recognition of typical hearing disturbances may help to make an early diagnosis. On the basis of these examinations it seems that carbon monoxide often causes hearing disturbances in patients suffering from chronic carbon monoxide poisoning. 118 references. 5 figures.—*Author's abstract.*

2. External Ear

Alginates in Endaural Wound Dressing. *E. R. Garnett Passe, King Edward Memorial Hospital, Ealing and George Blaine, Strangeways Research Laboratory, Cambridge, England.* Lancet 2:651, Oct. 23, 1948.

It is claimed that this dressing which is of absorbable cellulose does not adhere to granulation tissue and can be removed readily without any bleeding or disturbance with the epithelium and the cavity. Alginate is an extract of the brown seaweeds growing off the Scottish and Irish shores, the parent substance being alginic acid, a polyuronic acid of which the sodium salt combines with calcium ions to produce an insoluble gel. The dressing displays the following properties: (1) when in contact with the oozing surface; it is converted into a smooth jelly. (2) parts of the dressing not in contact with a moist surface remain unaltered; (3) it can be easily packed into crevices, conforming closely to the contour of the surface to which it is applied, dipped in saline or Ringer's solution or water (according to the grade of material used) immediately before use, it becomes a truly plastic dressing which keeps the skin flaps in place. (4) can be left in situ for the whole period of convelescence without being changed too often. (5) removal is effected by gentle withdrawal or by dissolving the material in the solvent at the grade used (saline solution, sodium citrate or water). In the case of the water-soluble alginate grades a good part of the dressing will liquefy by the time it is to be removed. Cellulose alginate containing cetyl pyridinium bromide has an antibacterial content agent akin to cetavlon, or cetrimide. 5 references.—*Author's abstract.*

Reconstruction of the Auricle with Diced Cartilage Grafts in a Vitallium Ear Mold. *Lyndon A. Peer, Newark, N. J.* Plast. & Reconstruct. Surg. 3:653-66, November 1948.

In 1943, Peer reported a new method for reconstructing an auricle by inserting diced cartilage grafts in a perforated vitallium ear mold and burying the mold with its cartilage filler beneath the patient's abdominal skin. (*Arch otolaryng.* 38:156, *August* 1943.) In this report, later experience with this method is discussed; the technic has been used in 22 cases.

First operation: Rib cartilage is removed from the right side of the patient's chest and diced into many fine cartilage cubes. These diced cartilage grafts are introduced into each half of a perforated vitallium ear mold (*Austenal Co. New York, N. Y.*) and the two halves of the mold fastened together pressing the diced cartilage grafts into the shape of an ear. The mold with its cartilage filler is inserted in a pocket beneath the patient's abdominal skin. During a period of five months, blood vessels and connective tissue grow through the openings in the mold and fasten the diced cartilage segments firmly together.

Second operation: The vitallium ear mold is removed from the abdominal pocket five months following burial, the two halves of the mold separated and the diced cartilage ear framework removed from the mold. This diced cartilage ear framework is inserted in a pocket beneath the skin in the ear region and a firm dressing applied to keep the skin in contact with the cartilage.

Third operation: The diced cartilage framework is dissected free from the temporal fascia and periosteum of the temporal bone. A split skin graft sutured over a dental stent mold is inserted behind the new auricle to cover the back surface of the diced cartilage framework and the raw scalp surface. This will permit the new auricle to stand out at an angle from the side of the head.

Fourth operation: The distorted ear lobe is shifted into normal relationship with the reconstructed auricle.

Fifth operation: Final trimming operation to sharpen the helix, increase the depth of the concha and canal region and remove hair bearing skin.

Peer states that whenever possible, the first operative step to reconstruct an auricle should begin when a child is about 4 years old. This allows the surgeon a sufficient time interval in which to complete the ear before the child enters school which lessens his handicap and facilitates adjustment with schoolmates. The internal ear is usually normal in cases with congenital meatal atresia but operations to provide a skin-lined tube in the canal region in the hope of exposing a normal drum membrane are useless procedures. Peer made a skin-lined opening into the antral cavity in 2 patients but the hearing was not materially improved in either of these children. This same procedure combined with a Lempert operation might improve the hearing in selected cases. Children with bilateral meatal atresia will hear (through bone conduction) a voice raised slightly

above normal and will learn to speak rather late in a somewhat toneless voice. The quality of speech in these bilateral cases is greatly improved if the children can be induced to use a hearing aid. Children with congenital meatal atresia on one side and a normal drum membrane on the opposite side will hear well and consequently learn to speak in a normal manner. 9 references. 9 plates.—*Author's abstract.*

Treatment of Otitis Externa with Sulfanilamide Ointment. *Philip S. Spence, Jr., Massachusetts Memorial Hospitals, Boston, Mass.* Arch. Otolaryng. 47:336. March 1948.

The treatment of a large number of soldiers in India who had infected external auditory canals is reported. The control of infections was made difficult by the extremely hot, humid and dusty climate. An effective method of therapy was developed; it involved scrupulous cleaning of the auditory canal with cotton-tipped applicators dipped in hydrogen peroxide, followed by thorough drying of the canal with cotton applicators and liberal application of 5 per cent sulfanilamide ointment, all surfaces of the canal and drum being covered with the ointment. Pain, which was usually present, generally subsided after one treatment. Itching and all signs of irritation were cured in most cases by daily treatments for seven to twelve days. Some patients were treated for three to four weeks, with lengthened intervals between visits. A recurrence in som patients responded to reinstitution of local treatment. Some patients had severe cellulitis and edema of the canal with only a filiform opening or none at all in the canal. These patients were given full doses of sulfonamides or penicillin and moist heat locally until the cellulitis subsided; occasionally an external canal appeared healed but the patient complained of itching; when the canals were wiped with an applicator soaked in meta-cresylacetate, the itching ceased after two or three applications. This treatment was beneficial for mold infections and for those caused by fungi and bacteria. The ointment containing 5 per cent sulfanilamide was chosen empirically. 2 references.

3. Internal Ear

Static Function of the Labyrinth. Attempt at a Synthesis. *S. H. Mygind, Copenhagen, Denmark.* Acta oto-laryng. Suppl. 70. September 1948.

From the evolutionary viewpoint, the labyrinth is a transformed cutaneous organ. The labyrinthine sense therefore corresponds to an especially well developed cutaneous sense. The development of the labyrinth is described. The shape of the semicircular canals expose their neuroepithelium to pressure changes caused by accelerations in the characteristic curvature plane of each canal. These pressure changes form a stimulus which produces motor reactions in opposite directions similar to contact-seeking cutaneous reflexes. There is no real difference between head and eye reactions, both acting to bring the head, body and line of vision back to normal. Opposite parts of the neuroepithelium differ in their development, that of one part

being higher or dominant and the other lower or subordinate. The former is the more sensitive. The higher specific gravity of the otoliths cause them to react to postural changes, straight accelerations and centrifugal force, while the cristae and cupulae of the semicircular canals cause them to react to curved accelerations. Labyrinthine tonus results from the reaction of both organs to the continuous hydrostatic endolymph pressure. This study is an attempt to elucidate this hypothesis concerning function of the vestibular organ by macroscopic and microscopic comparative anatomy and embryology. Clinical investigations and physiologic experiments during the past one hundred and twenty-five years are taken into consideration. Studies on the equilibrial reactions of the river crawfish proved that they correspond to the otolith reactions in the vertebrates. This apparently confirms the opinion that the static labyrinthine function is based on a primitive mechanism closely related to optic and tactile orientation reflexes. There is a further possibility that mucula sacculi and macula lagenae may have a sound reaction as well as static function. Further experimental research is necessary for corroboration and correction of these views. 141 references. 89 figures.

Observations upon the Loudness Recruitment Phenomenon, with Especial Reference to the Differential Diagnosis of Disorders of the Internal Ear and 8th Nerves. *M. R. Dix, C. S. Hallpike and J. D. Hood, National Hospital, London, England.* J. Laryng. & Otol. 62:671-86, November 1948.

Further studies of the loudness recruitment phenomenon have been made by the equal loudness balance technic as first described by E. P. Fowler (*Arch. Otolaryng.* 24:731, 1936.). The authors have endeavored to throw more light upon the mechanism of recruitment by means of a detailed clinical study of two disorders, Ménière's disease, in which the pathology is known to affect the endolymph system of the cochlea with its contained cochlear end-organs and eighth nerve degeneration due to neurofibroma and other space occupying lesions of the cerebellopontine angle. Loudness balance tests were carried out in 30 cases of unilateral deafness due to Ménière's disease and 20 cases of degeneration of the eighth nerve, due to neurofibroma and other varieties of space-occupying lesions of the cerebellopontine angle. Loudness recruitment was found to be present and complete in all 30 cases of Ménière's disease but was found to be absent in 14 of the 20 cases of eighth nerve degeneration. In the remaining 6 cases it was present but incomplete. Loudness recruitment was thus showed to be characteristically present in a disorder of the end-organ of hearing and to be characteristically absent in a disorder of the cochlear nerve fibers. This latter finding sharply contraverts existing views on the neurologic mechanism of recruitment. The practical and theoretic significance of the experimental results is discussed. New hypotheses are advanced in explanation of these results and are based upon recent experimental work on the physiology of hearing and upon the known pathology of the cochlea and eighth nerve. 19 references. 14 figures.—*Author's abstract.*

The Effects of Streptomycin on the Eighth Nerve System. *M. R. Dix, National Hospital, London, England.* J. Laryng. & Otol. 62:735-45, December 1948.

Streptomycin has a selective toxic effect upon the eighth nerve system. Toxic vestibular effects are the rule in cases receiving a dosage of not less than 30 mg. per kilogram of body weight. Cochlear effects are much less common and are unlikely to occur unless the drug is given in larger doses. Four children were treated for three months. Three of these received 0.1 Gm. streptomycin daily by intrathecal injections during the first and third months in addition to intramuscular injections. The concentration of the drug aimed at was 44 mg. per kilogram. This was given by intramuscular injections every six hours. The fourth child received intrathecal streptomycin during a second course after two months' rest from all treatment. In the case of a fifth child the first course of intramuscular streptomycin was prolonged for five months. One adult received prophylactic streptomycin for six weeks. Vestibular effects were measured by the caloric test described by Fitzgerald and Hallpike (1942). In 1 of 6 cases cochlear function was reduced significantly during treatment. Caloric responses were abolished in all 6 cases and this occurred whether streptomycin was given intramuscularly and/or intrathecally. In the 5 children there was no subjective vestibular disturbance during initial therapy and there was no spontaneous nystagmus. In the adult subjective vestibular disturbances were marked. He had severe vertigo and nausea for several days beginning three weeks after the onset of therapy. These symptoms resolved as the caloric responses were abolished. He still had difficulty walking in the dark after nine months. In 5 of the cases caloric responses were abolished permanently during the first course of streptomycin therapy but they were never abolished completely in the sixth case. After two months' rest the responses were partially restored and only disappeared completely with a second course of treatment. There was no subjective cochlear disturbance in any case. One case showed objective disturbance in that the audiogram showed some loss of hearing towards the end of the second course of streptomycin but the hearing of this patient is again improving. It is concluded that streptomycin has a selective toxic action upon the vestibular apparatus. 5 references. 7 figures.

The Present Status of the Fenestration Operation for Otosclerosis. *William Wallace Morrison, New York, N. Y.* New Orleans M. & S. J. 101:222-28, November 1948.

Otosclerosis typically produces a bilateral ankylosis of the stapes, beginning in young people and progressing to a severe conduction deafness. This is characterized in the early stage by a normal bone conduction but with a greater loss of hearing by air for low tones than for high. Later the loss by air in low and high tones is about equal, with bone conduction remaining good until the process is far advanced. The diagnosis of probable clinical otosclerosis can be made by any practitioner who will take the time. Tuning fork tests should be done if there is a well-marked deaf-

ness for the conversational voice in a quiet room with the opposite ear masked by rubbing with the palm of the hand. Air and bone conduction are easily measured by Fowler's modification of the Rinne test, in which during a single run of the fork the prongs are held an inch from the meatus, then the stem firmly placed alternately over the mastoid antrum until the patient indicates he no longer hears in either position. The Rinne is negative when bone conduction is longer in duration than air conduction. This is characteristic of conduction deafness, and if simple otoscopy reveals normal, or merely scarred drums without perforation, the diagnosis of clinical otosclerosis is highly probable. Such patients should be referred for an audiogram of both air and bone conduction. If the audiogram findings in otosclerosis are characteristic, the diagnosis is confirmed and the suitability of the patient for fenestration may be determined by careful study. Fenestration is indicated only in disabling conduction deafness due to otosclerosis. It is useless in perception deafness of any type. It is contraindicated when air hearing loss is at or greater than 25 db. and when severe bone conduction loss indicates marked cochlear degeneration. It is also contraindicated for surgical reasons with chronic drum perforations of all forms, in dermatitis of the ear, in active syphilis and tuberculosis, chronic nephritis, marked hypertension and all blood dyscrasias. Prospective candidates for the operation thus require a careful general physical survey and an estimation of psychologic stability in addition to the full otologic study. This should be handled by a trained otologist. In general the results of fenestration in properly selected patients are satisfactory if not always excellent. Some patients fail to secure a good result and even rarely lose some hearing as a result of an aseptic labyrinthitis, which may occur in spite of efforts to prevent it. Others secure a good or excellent early result which is lost in weeks or months, even up to two years, by bony closure of the fistula. This may not be prevented by present day technic in every case. The results in skilled hands nevertheless justify the operation in most of the cases judged to be ideal or at least suitable by the fenestration surgeon. 2 references. 1 figure.—*Author's abstract.*

Fenestration Surgery for Deafness. Present Status. *Charles I. Johnson, Winthrop Foundation, Boston, Mass.* New England J. Med. 239:619-20, Oct. 21, 1948.

Fenestration is effective only in cases of otosclerosis, a histologic lesion in the bone of the inner ear which causes new bone to form about the foot place of the stapes. As fixation of the stapes increases, the deafness grows worse. The nov-ovalis operation opens a new fenestra in the inner ear circuit. Otosclerotic deafness begins in adolescence or early adult life and usually increases with time until it becomes incapacitating. A history of acute otitis media does not preclude fenestration if the ear drum membrane is intact but history of a chronically suppurating middle ear is a contraindication. The otosclerotic patient hears well over the telephone and in noisy places. This is also true in chronic catarrhal or chronic adhesive deafness but these latter patients give a history of nasal allergy or

chronic upper respiratory infection and earache. In addition the ear drum is characteristically thickened, atrophic, scarred and possibly perforated anteriorly. The otosclerotic ear drum is normal, without perforation or discharge and gray or pink unless an otitis media has occurred to complicate the picture. By tuning-fork tests, the otosclerotic patient will show prolonged bone conduction and diminished air conduction. He hears well with a hearing aid and has the choice of using one instead of undergoing surgery. A hereditary factor has been found in 53 per cent of the otosclerotic cases and about six times as many women as men have otosclerosis. In about one-half the female patients deafness increases during pregnancy. The optimum age group for the operation is between 18 and 50. The emotionally unstable patient is a poor psychologic risk for two reasons: (1) success cannot be guaranteed; (2) even though successful some operations are followed by vertigo. Fenestration does not give perfect hearing but it does make possible practical hearing. The patient can carry on a conversation, attend lectures or church and otherwise live a normal life. For properly selected patients, the chance of providing permanently (two years or more) serviceable hearing is about 50 per cent. Of 64 operations performed by the author between December 1941 and April 1946, 48.5 per cent were successful. The most striking effect produced by a successful fenestration is the extraordinary change for the better in the patient's personality, transforming the self-conscious, dejected, hypersensitive individual who has been living a limited life into a self-confident, happy and adjusted man or woman.—*Author's abstract.*

Labyrinthine Surgery for Meniere's Disease. *J. R. Lindsay, Chicago, Ill.* Laryngoscope 59:22-34, January 1949.

Surgical intervention is usually reserved for the 10 to 20 per cent of cases which are not sufficiently controlled by medical therapy. An intralabyrinthine procedure has been favored because of the freedom from risk. Portmann's operation, which opens the saccus endolymphaticus has not given consistent results. Experiments on the monkey have showed that the saccus heals promptly after it has been opened or destroyed, without visible alteration of the sensory organs in the labyrinth. Destruction of the labyrinth by labyrinthectomy or by injection of alcohol destroys both auditory and vestibular function. Ablation of the ampullary end of the membranous horizontal semicircular canal through a fistula has been reported by Cawthorne to have relieved the vertigo but caused complete deafness. Ablation of part of the membranous canal accidentally during a fenestration operation has caused complete deafness in only some cases. Attempts to prevent vertigo by needling the nerves to the horizontal canal ampulla and the utricle through a fistula were partially successful. Vestibular function returned in these ears indicating inadequate destruction. A simple fenestra in the horizontal canal, decompressing the perilymph, did not relieve vertigo attacks. A fenestra in the horizontal canal made by the simple mastoidectomy approach and left uncovered resulted in a permanently open fenestra in three successive cases. An open fenestra in such

cases is undesirable and can probably be avoided by making a small fistula, leaving bone dust in it, and destroying the membranous canal. Labyrinthine surgery is unsuited for bilateral cases since hearing likely will be destroyed. 15 references.—*Author's abstract.*

Ménière's Syndrome. Successful Treatment by Surgery on the Sympathetic. *E. R. Garnett Passe, King Edward Memorial Hospital, and J. S. Seymour, Ealing, England.* Brit. M. J. 4583:812-16, Nov. 6, 1948.

The authors believe that the syndrome of nerve deafness, giddiness and tinnitus have a common origin in some disturbance in metabolism caused by an alteration in the blood supply. It is pointed out that the blood supply to the internal ear is by the internal auditory artery, and the variability of the distribution of the arteries indicated by Nabeya might well account for the variable degree of association of cochlear and vestibular signs in Meniere's syndrome. This would reasonably substantiate the theory that the predominant etiologic factor is one of vasoconstriction and that the smaller vascular distribution to a particular portion of the organ will imbue that artery, by virtue of its size, with greater vasoconstrictor properties hence a preponderance of symptomatology of the organ of distribution. In order to improve the blood supply to the internal ear an upper dorsal sympathectomy on one or both sides is advocated. H. H. Woollard states that vascular tone from the aorta to the periphery is maintained by vasomotor nerves in two ways: (1) in the aorta large bundles from adjacent sympathetic ganglia composed almost entirely of nonmedullated nerve fibers pass into the adventitia, some lying superficial and some deep near the media, the bundles continue to the periphery, forming a plexus of nonmedullated fibers from which further fibers pass inwards and form an abundant mesh of the finest fibers within the muscle coat; (2) from the peripheral nerves these fibers are almost entirely medullated, the muscular coat is innervated by the fine network, the individual elements of which divide and fuse together to give absolute continuity complete throughout the vascular wall. Physiologically, Langley, Bayliss and Gaskell have showed that bars of constrictor fibers are exclusively sympathetic ganglionic and that there is no other source of supply. Originally the stellate ganglion was removed but it is felt that this is not necessary if first, second and third ganglia are excised and the vertebral artery ligated and divided. The advisability of doing this on both sides, because of anatomic verieties in the circle of Willis' is not yet decided. The operation is described and there is an account of results in 12 cases closely followed over a fifteen months period. All cases were typical examples of Meniere's syndrome of a severe character which did not respond to medical treatment. One case also had a severe migraine and this to date has been completely relieved. The ages of the patients varied. Every case of giddiness was relieved though 1 patient had a slight recurrence some months later possibly because the other ear was affected. The effect on tinnitus was apparently unpredictable, though on the whole it was reduced, in 3 cases it was relieved completely. Each patient with concomitant nerve deafness (except

the last 2) has showed improvement of hearing by both air and bone conduction. If the nerve deafness was severe it was beyond relief. 15 references.—*Author's abstract.*

Lemoyez's Syndrome. An Allergic Disease. *Watt W. Eagle, Duke Hospital, Durham, N. C.* Ann. Otol., Rhin. & Laryng. 57:453-64, June 1948.

A brief review, in chronologic order, of recent investigations is presented of the theories causing Meniere's disease, with hydrops of the endolymphatic system as the more probable cause. Duke, Proetz and others are quoted, in which allergy was found to be the basis of attacks of Meniere's disease. Atkinson in 1941 observed allergy and angiospasm to be factors causing Meniere's disease. In Atkinson's allergic group he reported finding hearing impairment and tinnitus to improve following the attack of vertigo. This finding coincided with observations of Lermoyez in that the appearance of the vertigo was a signal for the improvement of the deafness and tinnitus. Lermoyez in 1927 proposed vasospasm as a probable cause of deafness and tinnitus followed by vertigo, nausea and vomiting, with all symptoms subsiding after the vertiginous attack. When the restoration of circulation in the cochlear and vestibular arteries occured, then the symptoms disappeared. He compared the episode during the vertiginous attack to a violent storm clearing the sky. Atkinson thought the deafness and tinnitus were less severe and improved or completely disappeared, when the attack was due to allergy. He termed his pattern of symptoms as producing Meniere's syndrome rather than Lermoyez's syndrome. The author observed over a period of nine years a total of 11 cases that presented symptoms of tinnitus and deafness. All of these cases were cleared of their symptoms after the attack of vertigo. In each of these cases there was a history of, or the finding of, giant urticaria, which led to the conclusion that Lermoyez's syndrome apparently was an allergic disease. Three cases are presented which demonstrate the return of hearing by audiograms. The most interesting case was 1 in which the audiogram of the right ear showed almost total loss of hearing at the first time of observation, with marked return of hearing in three days, followed by still further improvement one month later and almost normal hearing about ten days later. The disease may recur as was observed in several cases. Lermoyez's syndrome is pointed out as a separate entity from Meniere's disease in that the appearance of symptoms is the reverse to that in Meniere's disease and the prognosis is entirely different. A poor prognosis is usually pronounced for Meniere's syndrome, while a good prognosis is predicted for patients exhibiting Lermoyez's syndrome. The author concludes that Lermoyez's syndrome is definitely an allergic disease and more probably associated with the urticarial type of allergy. He suspects that the so-called cases of allergic Meniere's disease of Atkinson's are in reality cases of Lermoyez's syndrome. 10 references. 3 figures.—*Author's abstract.*

Treatment of Advanced Cancer Involving the Ear. *Charles L. Martin and James A. Martin, Dallas, Tex.* Am. J. Roentgenol. 60:750-57, December 1948.

No single therapy is effective for advanced cancer of the ear. It is the practice of the authors to remove all cartilage showing malignant invasion with electrosurgery before starting irradiation. This immediately relieves discomfort, shortens the healing period and improves chance of cure. It should be done at once in cases showing malignant tissue growing about a region of irradiation necrosis. After inducing local anesthesia, the diseased area is clamped and removed with the cutting current. The incision is made through normal tissue outside the malignant area. The wound is never sutured and rapid healing occurs if the cartilage does not protrude above the skin edges. Large lesions may require removal of the whole auricle and the deeper parts are excised by blunt dissection. All devitalized tissue is removed with sharp, curved scissors. Poor surgical results are caused by extension of the malignant process and the procedure described is only a preliminary measure. Immediately after operation a plan of irradiation should be instituted. A daily dose of 315 r (in air) is given to a 10 by 10 cm. field, for 12 doses, using 200 kv., a target-skin distance of 50 cm. and a filter of 0.5 mm. cu and 1.0 mm. al. Implanted low intensity radium needles are effective. They are inserted into malignant areas to deliver doses from 6,000 to 12,000 gamma roentgens to all the cancer cells in a seven day period. Electrosurgery usually leaves a layer of tissue for implantation. Metastatic cervical lymph nodes are treated with implanted low intensity radium needles plus roentgenotherapy. The needles are placed in the lymphatic bed to deliver the same dose as that used for the primary lesion; 350 r are given daily to the same area, using 220 kv., until 2,100 r are given while the needles are in place. A primary filter of 2.0 mm. cu is used with a 50 cm. target skin distance. Needles are removed after seven days and boric acid ointment dressings are applied. The wound usually heals in six weeks to three months. The treatment depresses parotid gland function, producing oral dryness but the facial nerve is never damaged. Overdosage may cause sloughing in the skin behind the ear. Damaged cartilage in the treated area must be removed. Of 57 patients with advanced cancer of the ear, 35 cases were followed closely. After treatment, only 9 of the patients are known to have died of cancer and 2 are still alive with evidence of the disease. Complete primary healing was obtained in 22, and 18 have remained well and free of disease for three to seven years of study. Most of these cases had been treated unsuccessfully elsewhere. 11 references. 6 figures.

4. Mastoid

Formation of Cholesteatoma Around a Deposit of Sulfa-Powder. *L. B. W. Jongkees, Utrecht, The Netherlands.* J. Laryng. & Otol. 62:754-55, December 1948.

A 10 year old boy had recurrent middle ear inflammation on the right side. The mastoid was opened and diseased bone removed. The cavity was filled with sulfathiazole powder and closed primarily, with uneventful healing. Some months later a head cold developed and the scar behind his ear became tender and ruptured spontaneously. This was repeated several times in the next two years, with spontaneous healing. In 1948 healing did not occur. Examination showed swelling and tenderness of the mastoid area around the scar on the right. There was a foul-smelling discharge and the temperature was 103 F. Roentgenograms showed a large destruction of bone. The mastoid cavity was inspected under general anesthesia. The old cavity was filled with a white clot, granular at the inside and clear cholesteatoma at the outside of the clot. Sulfathiazole crystals had formed the granular inside and the outside was bound by sheets of cholesteatoma. Bacillus proteus was the bacteriologic agent. After removing the clot a large area of destruction toward the inside of the skull was found. A radical mastoid operation was performed and healing was uneventful. The destruction was caused by the cholesteatoma. Primary closure of the operative cavity has been advocated since antibiotic agents came into use. The treatment gives quicker healing. This case illustrates the need for caution in performing the primary closure, since sulfonamides do not prevent progression of an inflammation in the middle ear or mastoid cavity.

Metastatic Carcinoma of the Mastoid, Following Carcinoma of the Prostate. *Irving Feldberg, Veterans' Administration Center, Bath, N. Y.* Ann. Otol., Rhin. & Laryng. 57:1099-1101, December 1948.

A 50 year old white man complained of pain and deafness in the right ear of six weeks' duration and right facial paralysis of twelve days' duration. Six months previously carcinoma of the prostate had been found. It was believed that the mastoid lesion was metastatic carcinoma and inoperable. Autopsy findings were primary carcinoma of the prostate, with metastatic involvement of petrous and mastoid portions of the right temporal bone, both lungs, left ribs, liver, lumbar spine, skull and pelvis. 2 references.—*Author's abstract.*

Tuberculous Mastoiditis Treated with Streptomycin. Report of a Case. *O. D. Fisher and E. A. Malkin, King's College Hospital, London, England.* Lancet 2:689, Oct. 30, 1948.

Tuberculous infection of the middle-ear cleft is serious, especially in infants. It may be complicated by facial palsy, destruction of the labyrinth and meningitis. An 8 year old female infant was seen Dec. 19, 1947, with a seven days' history of right otorrhea and two days' partial right facial paralysis. There was profuse, foul discharge from the right ear;

the drumhead was indistinct and there was a granulation which bled freely when touched. There was slight postauricular edema. Right facial palsy was present, incomplete in the upper division of the nerve. A submandibular gland on the right side was enlarged and the spleen was just palpable. On December 21 the appearance suggested a tuberculous infection and a cortical mastoidectomy was performed under basal paraldehyde and local procaine infiltration. The skin and periosteum were edematous: a large cavity with foul, necrotic material was found in the cortex. The wound was closed and a rubber drain left in for thirty-six hours. Penicillin was given (25,000 units every eight hours) until December 28. Streptomycin was begun on February 6 and continued for thirteen weeks, for a total dose of 16.5 Gm. The dose was computed on the basis of 0.02 Gm. per pound body weight daily and given every twelve hours by intramuscular injection, with 0.1 ml. of 2.5 per cent procaine. Local treatment involved mopping out the meatus, and later syringing the meatus twice daily with hypertonic saline and eusol. The meatal discharge dried up completely in late April. An improvement in facial paralysis was first seen in the middle of January and recovery was complete by mid-March. The case is interesting in that streptomycin was used after a cortical mastoidectomy with apparent resolution in fourteen weeks. It is unknown whether streptomycin therapy will obviate the need for radical exenteration in these cases. 5 references.

5. Middle Ear

A Newer Concept of the Management of Otogenic Infection. *Merrill B. Hayes, Chester, Pa. and C. Fremont Hall, New York, N. Y.* Arch. Otolaryng. 47:289-302, March 1948.

Otogenic infections in the temperate zone are essentially of two kinds: a winter type, which is caused by gram-positive organisms and a summer type, which is caused by gram-negative organisms. Most patients treated for ear infections have acute otitis media. If it is diagnosed and treated early, resolution occurs within a month, with few complications. Where complications occur, Pseudomonas aeruginosa is often found, against which the newer drugs are ineffective. For chronic infection extreme cleanliness is necessary; local drugs are ineffective. Local cleansing and systemic medication alone often causes disappearance of granulations and produces cultures devoid of gram-positive organisms, though in many cases gram-negative forms remain. External otitis, like chronic suppurative otitis media, is caused predominatingly by Ps. aeruginosa. Although the type of otogenic infection caused by gram-positive organisms can be treated effectively with sulfonamides and antibiotic agents the type characterized by gram-negative organisms does not respond to these drugs. A new compound, dibromosalicylaldehyde (DBSA) is effective against gram-negative organisms, including pseudomonas and fungi. It can be used as a powder, ointment, or solution. Patients with chronic suppurating ears with predominantly gram-positive organisms were given 20,000 units of penicillin intra-

muscularly every three hours until these organisms disappeared or the ear was dry. If gram-negative organisms still flourished, the ears were irrigated with 1 per cent DBSA once or twice daily, followed by insufflation of a powder containing DBSA (2 per cent), sodium borate (3 per cent) and talcum (95 per cent). In otitis externa, the ears were cleaned as thoroughly as possible. In otitis externa diffusa, a wick of 1/4 inch gauze saturated with carbowax containing 2 per cent DBSA was introduced and allowed to remain in the canal twenty-four to seventy-two hours. For the eczematous type, a wick was inserted or else twenty-four hour local application, followed by dry wipes and powder insufflation. For slight weeping, insufflation sufficed. Seventy-one patients with external otitis were relieved in one day. In 30 the infection resolved within one week, and remainder required two to four weeks. Of 28 patients with otitis media, 12 had dry ears in two to six weeks and the remainder within two and one-half months. 8 references. 8 tables.

Stapediotomy (Stapedius Tenotomy). *L. R. S. Taylor and G. H. Bateman, London, England.* J. Laryng. & Otol. 63:79-8 , February 1949.

It has been experimentally demonstrated that, if the chain of ossicles of the middle ear is broken, the action of the stapedius muscle is unopposed and the foot of the stapes is firmly tilted into the oval window. This condition often is reproduced in chronic suppurative otitis media, the incus being partly or completely destroyed. It is supposed that continuous bathing of the muscle in purulent fluid causes a muscle spasm followed by fibrosis as a result of which the stapes is so firmly fixed in the oval window that permanently impaired hearing ensues. This hearing loss should be at least partly cured by mobilization of the stapes. This is done by dividing the stapedius tendon. There is no phase difference in sound reception if the oval and round windows carry the same mass. Part of the divided stapedius tendon is therefore left attached to the stapes and the mobilized stapes left in place. The membranes of the round and oval windows will then have different inertia. In performing this operation, magnifying spectacles are used to define the tendon which is then divided from above downward. The tendon is quite tough. A Furness myringotome is useful for the procedure. In a series of 6 cases, 1 patient became severely deaf to air conduction after the stapes was removed completely leaving an intact oval window membrane. One crus of the stapes was fractured in another and no improvement in hearing occurred. One of the remaining 4 cases showed no change but the other 3 showed dramatic improvement in hearing. An illustrative case is described. 2 tables.

The Incidence and Treatment of Infective Ear Disease in Factory Employees. *Colin M. Johnson.* Brit. M. J. 4584:1049-59, Dec. 18, 1948.

Chronic ear diseases, especially chronic suppurative otitis media, cause inefficiency, invalidism and even death. Inefficient treatment because of the absence of a suitable ear treatment service is the chief cause of the high incidence of the disease. A random survey of 1,902 factory employees

showed that 3.3 per cent had middle ear suppuration and 17.8 per cent had active or healed middle ear disease. Of 1,711 ear, nose or throat patients examined at factory medical clinics, 389 had disease of the pinna and external auditory meatus and 274 had chronic suppurative otitis media. Pain was the principal cause of loss of efficiency. Middle ear infections rarely caused pain and when present, it was not especially severe or of long duration but inflammations of the pinna and external auditory meatus caused considerable and longer lasting pain. Otitis externa did not cause the same disability as otitis media but was of major importance in the factory ear treatment service because of its frequency and the time required for treatment. The highest incidence of perceptive deafness, 33 per cent, occurred in persons 41 to 50 years old, showing a sharp increase over the 7 per cent of the fourth decade of life. It fell to 26 and then to 18 per cent during the next 2 decades. Of 393 cases of severe deafness, 49.3 per cent resulted from active or healed otitis media. These statistics show the value of early treatment of otitis media, before incurable deafness develops. Onset of the disease usually occurs in childhood and must be treated by the general practitioner and school-treatment services. The 3.3 per cent of factory workers found to have chronic suppurative otitis media shows the inadequacy of these services. It has been found that treatment in a factory medical department will obtain dry ears in 67 to 83 per cent of patients with unilateral and 38 to 53 per cent of patients with bilateral otitis media. This treatment will cure 5 to 6 per cent of the unilateral cases. Later examinations show that more than half the dry ears after initial treatments relapse but further treatment usually is successful. It may therefore be anticipated that a complete course of medical treatment in a factory medical department will cause 38 of 100 cases of unilateral chronic suppurative otitis media to have dry ears for at least six months. A decided advantage of conservative over surgical treatment is that a greater degree of hearing is obtained. Results of treatment in a factory medical department are not as good as under ideal conditions but they do compare favorably with those of the average hospital otologic outpatient department. Better results would be obtained with a permanent service and a personnel better trained in this work but factory treatment is usually adequate and accessible. 19 tables. 2 figures.

RHINOLOGY

1. General

Epistaxis. The Use of Sterile Marine Sponges in Its Control. *O. Jason Dixon, Kansas City, Mo.* J. Missouri M. A. 45:824-27, November 1948.

The primary objective of hemostasis is to close the vessel at the site of the vascular lesion. Satisfactory results have been obtained by the use of a sufficient number of small, firm, sterilized marine sponges, packed firmly within the nasal chamber and left in that position until the process of thrombus and organization have been completed. The sponges may be

cut with a pair of sterile scissors to the approximate size and shape of the distal end of the patient's thumb and inserted in the nose with bayonet forceps. It is well to insert the primary sponge back and beyond the site of the lesion because there may be a bleeding point not easily observed and to act as a support for the subsequently inserted sponges. No harm is done should these sponges be swallowed or fall into the epipharynx. No oily substances should be used with the sponges because they prevent the spontaneous drainage of the normal secretions of the mucous glands and inhibit the surface exposure of the blood as it enters the sponge. If removed too soon the sponge brings the clot away and by withdrawing the thrombus from the vessel, reopens it and it may be necessary to repack the nose to control the bleeding. Often, it is most satisfactory to remove only one sponge at a time. If the original sponges are left in position in the nose forty-eight hours or longer, the clot within the sponges breaks down and separates spontaneously from the underlying thrombus with no interruption of the normal healing. These sponges may be sterilized by this method: remove all foreign bodies; soak overnight in tincture of green soap solution; wash by squeezing under running water; soak in Bard Parker solution overnight; again wash thoroughly under running water; dry in sterile shallow pan under the direct rays of an electric heater or drier; place in sterile widemouthed covered jar until used. 1 reference.—*Author's abstract.*

Mucoceles. *M. J. Tamari and James J. O'Neil, Chicago, Ill.* J. Laryng. & Otol. 63:24-30, January 1949.

It is believed generally at the present time that the mechanism of mucocele formation consists of a cystic accumulation of fluid resulting from either trauma or infection, which undergoes active enlargement within a sinus causing atrophy of the surrounding bony structure. Careful studies of sections obtained from 4 cases of mucoceles seen in a nine month period lead to a different conclusion. Histopathologic studies of the mucocele specimens revealed the contents of the mucocele to consist chiefly of red blood cells, red cells suspended in serous fluid, fibrous elements and larg cells. Significantly, there are no cholesterol crystals present. It is known that cholesterol crystals are found in cysts derived from ectoderm such as dental cysts but are absent from growths arising from mesoderm and are thus absent in mucoceles. The external mucosal changes consist primarily in a modification of the normal sinus mucosa. The normal cilia are absent and the columnar cells become cuboidal in type as a result of the pressure exerted by the developing mucocele. The inner wall of the mucocele is considerably thicker at the base where an initial submucosal injury resulted in an elevation and herniation of the sinus mucosa. It becomes thinner as the mucocele enlarges and contacts the osseous walls of the sinus. The changes of the adjacent bone are those characteristic of bones influenced by constant pressure and tension. In the beginning of the process, the pressure stimulates bone apposition and leads later to bone resorption which prevails above the first changes, giving the bone a thin parchment-like appearance. Signs of inflammation and cellular infiltration

are not visible and the entire process seems to be the result of a metabolic and physical alteration rather than one of an inflammatory osteitis. Because of this evidence gained in this study the authors feel that a mucocele is not due either to cyst formation in the lining membrane of the sinus or to the blocking of the sinus ostium. Their concept of the mechanism of mucocele formation is: (1) submucosal injury occurs as a result of traumatic hemorrhage or infection; (2) this results in an elevation of the mucosa with an accumulation of exudate beneath it; (3) herniation of this elevated mucosa occurs until it encounters the resistance of normal sinus mucosa of one of the sinus walls; (4) pressure is exerted upon the mucosa and the underlying bone producing characteristic changes. 5 figures.—*Author's abstract.*

Anthisan in Perennial Vasomotor Rhinorrhoea. *T. J. Reid, Royal Infirmary and R. B. Hunter, University of Edinburgh, Edinburgh, Scotland.* Lancet 2:806-7, Nov. 20, 1948.

Thirty-seven patients who had a history of typical perennial vasomotor rhinorrhea lasting at least six months and who were free of sepsis and large polypi were studied to assess the therapeutic action of Anthisan. At the first consultation a nasal specimen was taken and patients were supplied with dummy tablets to assess the emotional factor (not uncommon in this condition) and to train the patient in taking the tablets regularly. After two weeks, if the biopsy was positive (showing the typical allergic mucosa) the patients were given active tablets. The dosage was 0.6 Gm. daily in divided doses for four weeks. A second biopsy was taken after completion of the treatment and a third one month later. Complete relief with a histologic cure (reversion to a normal type of nasal mucosa), was obtained in 54 per cent and none of them (six months later) had reported for further treatment. Thirty-four per cent experienced some relief and still attended the department occasionally. Only 4 cases (12 per cent) obtained no benefit. 3 references.—*Author's abstract.*

The Management of Vasomotor Rhinitis. *Haddon M. Carryer and Clifford F. Lake, Mayo Clinic, Rochester, Minn.* Minnesota Med. 31: 1193-97, November 1948.

The symptoms of uncomplicated vasomotor rhinitis usually are intermittent. Nasal congestion is the chief complaint and there may be both anterior and posterior nasal drainage. The patients are apt to sneeze many times in quick succession. The symptoms become more persistent if polypoid degeneration of the nasal mucosa develops. Pathologically, the secretion contains many eosinophilic leukocytes but has no reducing substance. The mucosa becomes boggy, pale and somewhat bluish. In testing for an allergic cause, the allergic type usually occurs before the patient is 40 years old and there may be a personal or family history of allergy. An allergic survey should be undertaken. Allergy is treated by avoidance of contact and by specific desensitization. The role of physical allergy or hypersensitivity to changes in temperature and the cooling effect of moving

air has been emphasized in vasomotor rhinitis. These patients often exhibit an exaggerated sensitivity to external temperature changes. Drafts should be avoided and rooms adequately humidified and heated. The windows should be kept closed at night. The neurogenic factor produces nasal symptoms in many patients. Therapy which corrects underlying nervous tension often decreases the severity of nasal symptoms. These symptoms also may be excited by endocrine disturbances. This occurs in patients with excessively low basal metabolic rates. The symptoms often are brought on by pregnancy or the menopause. Patients should avoid contact with physically irritating substances and physically irritating habits should be discouraged. Chemical irritants also should be avoided. Self medication by nose drops and sprays aggravates the chronic nasal condition. Surgical procedures are warranted for polypoid tissue. The use of radium to produce subepithelial fibrosis after polypectomy helps prevent recurrence of polyps. Radium in the nasopharynx may secure adequate drainage. Surgical correction of a deflected nasal septum, spur or of hypertrophied tubinates should be deferred unless conservative methods have failed. A complication is the vasodilating pain syndrome. The disease may initiate pain of the so-called sphenopalatine ganglion syndrome. Antihistaminic drugs often are useful. Nicotinic acid is helpful where the physical allergy component is important. Histamine therapy occasionally is useful. Oral potassium or sodium iodide is effective when the primary complaint is referable to inspissated mucus in the nasopharynx and on the posterior pharyngeal wall. 7 references.

A Psychosomatic Approach to Vasomotor Rhinitis. *Marc H. Hollender, University of Illinois, College of Medicine, Chicago, Ill.* Am. J. M. Sc. 216:476-79, October 1948.

Psychogenic influences may exert an effect in at least three ways: (1) *Reaction to impending danger*:—Vasoconstriction within the nose in response to fear is part of a general homeostatic adaptation which prepared the organism for fight or flight. The airway is enlarged to accommodate an increased oxygen intake and a greater mucus production is provided to moisten the added air volume. The initial vaosconstriction is followed by vasodilatation. This is comparable to the local effect of epinephrine. The clinical picture in the after-phase is that of vasomotor rhinitis. The same reaction may be produced by an unconscious, internal conflict which threatens as a danger from within. In both instances (fear and anxiety) the effect follows sympathetic nervous system stimulation and is only one in a series of tension responses. (2) *Unsympathetic discussion of pertinent and conflictual problems*:—The primary picture was principally that of vasodilatation while the secondary one was that of edema. The authors believe that the impulses which effect the changes are carried by the vagus nerve. It is known that the autonomic nervous system may serve as an outlet for energy which, because of conflict and repression, is not released in words, thoughts or action. The impulses thus conveyed to the nasal structures give rise to the disturbance observed by Wolff *et al.* (3) *Result of direct suggestion*:—It has been showed that an artificial flower

can produce an allergic attack. During an attack the nasal mucous membrane will become edematous and pale. The response to inert medications in some cases of vasomotor rhinitis also illustrates the effect of direct suggestion.

Explanations for all the interaction of the various etiologic forces have not been worked out but two theories have been advanced to explain the connection between the psychogenic and allergic components: (A) emotional influences bring an alteration in the excitability of the autonomic nervous system and stimuli that were of subthreshold level acquire the capacity of acting as excitants; (B) psychogenic stimuli by their effect on the vascular innervation bring about a change in the blood supply of the peripheral tissue and, as a result, pathologic substances that normally would not penetrate the vessel wall are absorbed, leading to an antigen-antibody reaction. Endocrine factors occasionally play an important part. With thyroid deficiency circulatory changes produce a pallor of the nasal mucosa and with a high estrogen level, a definite tendency to hyperemia and edema is present. Though infections may play an etiologic role, it is probably more common for them to appear as complications. The nasal dysfunction opens the road to bacterial invasion. A shift in the *p*H to the alkaline side accompanying vasomotor changes is no doubt one in a group of factors responsible for the invasion. Sinusitis occurs secondarily and is the result of changes within the sinus membrane, direct extension of infection and interference with normal drainage. Other complications may be otitis media and laryngitis. If there are recurrent and prolonged attacks of vasomotor rhinitis irreversible morphologic changes are to be anticipated. Since the process is a dynamic one, the picture at any particular moment depends upon the interaction of a number of forces and the intensity and duration of the physiopathologic changes. As in any process in motion there will be shifts in the weight of the various etiologic factors from time to time. Initially the sensitivity to an inhalant may occupy the center of the stage. Later emotional conflicts may express themselves through this ready-made avenue. It is important to consider vasomotor rhinitis in terms of the total organism and the role played by emotional influences should not be overlooked. 11 references.—*Author's abstract.*

Antihistaminic Drugs in the Therapy of the Common Cold. *John M. Brewster* (*Capt., M.C., U.S.N.*). U. S. Nav. M. Bull. 49:1-11, Jan.-Feb. 1949.

A total of 572 patients with colds in varying stages were treated. All symptoms were aborted in 90 per cent of 21 cases in whom the treatment was commenced within an hour after symptoms appeared and in 87 per cent of 55 cases treated within the first two hours. Cures were also obtained in 74 per cent of 156 patients treated within six hours of their first symptoms and 70 per cent of 234 patients treated within twelve hours of onset. Cure was obtained in 1 of 2 control cases treated within an hour of onset, in 42 per cent of 12 patients treated within six hours and 31 per cent of 22 patients treated within twelve hours of onset. No cure was

obtained in patients whose treatment commenced more than twenty-four hours after development of symptoms. The history showed that 74 of the 572 patients had previously suffered from some allergic reaction. 21 references. 1 table. 2 figures.

Disturbances of Olfaction Resulting from Intranasal Use of Tyrothrycin. A Clinical Report of Seven Cases. *Ernest M. Seydell and William P. McKnight, Wichita, Kan.* Arch. Otolaryng. 47:465-70, April 1948.

Eight case histories are presented in which anosmia or parosmia developed directly or shortly after a tyrothrycin solution was used intranasally. The patients had persistent symptoms, ranging in duration from four to eight months. These symptoms outlasted the conditions for which the drugs were originally prescribed. At the time when the solutions were used, no patient had clinical influenza; 1 patient had an allergic history and had a perennial allergy as determined by smear and skin tests but she had no disturbance of olfaction before using tyrothrycin; parosmia persisted long after her allergic symptoms were controlled. One patient was tested by injecting camphor water U.S.P. intravenously and showed no response, thus placing her condition in the classification of an essential anosmia. None of the 8 patients regained normal sense of smell. Some patients also complained of loss of disturbance in sense of taste. There was some improvement in the intensity of the parosmia. 4 references.

Fibro-Sarcoma of the External Nares. *John F. Tolan and Thomas Carlile, Mason Clinic, Seattle, Wash.* Bull. Mason Clin. 2:83-86, September 1948.

Nasal hemorrhages developed in a 40 year old pregnant woman six weeks before delivery; she was hospitalized because of uncontrollable nasal bleeding. A large hemorrhagic-looking polyp filled the right middle meatus. Bleeding was controlled by anterior and posterior nasal packs. She was discharged but readmitted a month later and had a normal labor. The nasal growth was still present and bled occasionally. Removal was recommended but refused at that time. She was seen again about three weeks later when the tumor had become four to five times larger than when first seen, completely filling the external nares and displacing the septum to the left. Radiograms showed a soft tissue tumor of the right nares. There was chronic sinusitis of the left antrum, ethmoids and frontal sinuses and moderate thickening of the right antral mucous membrane. Blood counts were relatively normal. The tumor bled so freely that surgical removal was not tried. Biopsy showed a fibrosarcoma arising in a nasal polyp. Roentgenotherapy was decided upon and given in daily doses of 202 r in air with the following factors: 140 kv. 4 mm. al filtration, 5 ma., 5 cm. circular port. A total of 3,030 r was given through a single port. There was definite evidence of rapid tumor regression when treatment was completed, there was no bleeding and some breathing space in the right nostril. Only a small residual remained two months later and there was no sign of the original tumor six months later. No evidence

of recurrence was seen after nine months and the patient was in excellent condition. The ultimate result cannot be predicted for several years but the present course is most encouraging. 1 reference. 3 figures.

2. Nasal Sinuses

Optic Neuritis and Sinusitis. *Page Northington (Capt., M.C., U.S.N.) and Robert L. Rouen (Lt., M.C., U.S.N.).* U. S. Nav. M. Bull. 49:101-103, Jan.-Feb. 1949.

A 41 year old woman was admitted to the hospital with pain and blurred vision in the left eye, pain about the maxillary sinuses and a temperature of 100 F. Examination showed a purulent infection of all accessory sinuses except the frontal, the posterior ethmoids and sphenoids being chiefly involved. Vision was O.D. 20/20 and O.S. 13/20. The peripheral field showed a small concentric constriction, the central field was normal and the disk was grayish-white with 1 or 2 diopters of swelling and indistinct margins. There were no hemorrhages, exudates or other abnormalities and blood vessels and retina appeared normal. She was given penicillin 30,000 units and sulfadiazine 1 Gm. every three hours, thiamine hydrochloride 25 mg. daily and irrigations of the maxillary and sphenoid sinuses. Symptoms promptly subsided and vision in the left eye was 20/20 on the fourth day of treatment. The sinuses were clear and visual field and acuity normal on the eleventh day. Slight elevation of the nerve head continued for about three weeks. The rarity of optic neuritis in patients with a purulent sinus infection has caused skepticism concerning the casual relationship between the two conditions. Review of the literature shows the reported incidence of sinusitis as the cause of optic neuritis to vary from 0 to 33 per cent. This is believed to result from different criteria for the diagnosis of sinusitis. This case shows that the nasal accessory sinuses should be thoroughly examined in patients with optic neuritis and proper treatment given purulent sinusitis. 5 references. 1 table.

Abscess of Pterygomaxillary Space Following Acute Suppurative Sinusitis. A Case Report. *Walter P. Work, San Francisco, Calif.* Laryngoscope 58:1318-23, December 1948.

Following swimming in June 1942, an acute left suppurative maxillary sinusitis developed in a 15 year old boy. Neurologic symptoms and signs of intracranial disease developed as well as swelling of the left side of the face. There was extreme toxicity and fever. Three days after the onset of the swelling of the face an abscess in the soft tissues over the hard palate on the left was drained. On the fifth day an abscess in the soft tissues in the pterygomaxillary space was drained. Convalescence following this procedure was uneventful. Lipiodol was injected into the pterygomaxillary incision and drainage wound and gravitated through the posterior wall of the left maxillary sinus into the narrowed lumen of the sinus and from there through the middle meatus on to the floor of the

nose, proving that there was an opening into the pterygomaxillary space through the posterior maxillary sinus wall. The patient did not tolerate the sulfonamides and these drugs were discontinued early in the course of the disease. Only incision and drainage of soft tissue was done. This case illustrates the neurologic symptoms and signs present with pus in the pterygomaxillary space. Follow-up examination six years later showed the patient to be well. Allergic rhinitis which was noted in 1942 was evident on examination in 1948.

Acute Frontal Sinusitis. *Ernest D. Johnson, Alhambra, Calif.* Arch. Otolaryng. 47:165-76, February 1948.

Of more than 50,000 out patients observed because of diseases of the ear, nose and throat, only 68 had frontal sinusitis requiring hospitalization; osteomyelitis developed in 6 of these. There were twice as many left frontal sinuses as right involved. It is generally held that acute frontal sinusitis is the chief cause of osteomyelitis of the frontal bone. The most common causative factor of frontal sinusitis is infection of the upper respiratory tract; this was true in 47 of the 68 cases studied. Staphylococcus aureus was the predominamt organism. There is usually a history of a head cold or of symptoms occurring two to five days after swimming. There may be nasal stoppage and pain and tenderness over the frontal area. Swelling may occur. Usually the body temperature is not high. Pitting edema extending to the hair line may occur over the frontal bone. Increased headache and rise of temperature indicate meningitis, epidural abscess, subdural abscess or brain abscess. There may be localized convulsions and paresis. Vomiting and other signs of intracranial pressure appear. The chief points in diagnosis are a history of a cold or of swimming, of pain and tenderness over the frontal region and of nasal stoppage. Frontal edema suggests local osteomyelitis. Early roentgen findings are unreliable; one must watch for a change in density, a loss in the outline of the sinus and a reaction in neighboring bone. Intracranial complications are evidenced by convulsions, deep headache, vomiting and neck rigidity. Heat or cold to the frontal region may abort the disease in the early stages. Irrigation, particularly of the antrum, helps decongest the mucous membrane and permits drainage. Frontal sinus irrigation helps in selected cases. Sulfonamides and penicillin (10 to 30,000 units every three hours) may be of help. If pain and tenderness persist, the bone should be trephined at Ewing's point. If the symptoms persist after trephining, the inner table should be exposed and opened to uncover a possible epidural or subdural abscess. Roentgen signs of bone extension should be followed. Spreading edema indicates osteomyelitis and may require heroic measures such as removal of the bone at least 1 inch beyond the diseased area, although this point is disputed. Surgery plus penicillin may combat the complications effectively. Two illustrative cases are presented. 15 references. 2 tables. 2 figures.

A Case of Non-Metallic Foreign Body in the Ethmoidal Sinus. *H. C. P. Gunewardene, Ceylon.* J. Laryng. & Otol. 63:34-35, January 1949.

A 16 year old boy complained of inability to open his mouth freely, weakness of the left arm and an ulcer in the right cornea. Three months previously he had dived into a stream and a spike had entered his face and broken off. A piece of wood had later been extracted from the wound. Deafness occurred, his face became asymmetric and there was a discharging sinus below the right eye. The left side of his body, especially the arm, became weaker. Examination revealed right sided facial paralysis of the lower motor neuron type, right sided total nerve deafness and inability to raise the left arm beyond 30 degrees from the body. There was a sinus below the right eye; the entrance had a thin seropurulent discharge. There was a low-grade fever each evening. A corneal ulcer was caused by faulty closure of the right eyelids. Four days after admission the patient had giddiness, anorexia, nausea and vomiting. Roentgenograms showed an opacity of the right maxillary antrum but no foreign body. The right maxillary antrum was opened. There was a small amount of pus but no mucosal thickening. The ethmoidal cells were opened and a hard object was revealed lying lengthwise in the ethmoidal labyrinth. A piece of wood through the antrum. The ethmoid cells were cleaned and the wound closed without drainage. The sinus below the eye was curetted. Convalescence was uneventful. The loss of hearing and facial paralysis have remained. 4 references. 1 figure.

Knife Blade Traversing Maxillary Antrum and Remaining in Nose Six Years. *A. J. Vadala (Col., M.C., A.U.S.) and Kenneth Somers (Lt. Col., M.C., A.U.S.). Fitzsimons General Hospital, Denver, Colo.* Mil. Surgeon 103:207-10, September 1948.

A search of the medical literature back to 1916 showed but few cases described of large foreign bodies which remained in situ for a number of years in the nasal accessory sinuses, the nose itself or the postnasopharynx. Among these are: a knife blade (case similar to the one reported in this article); knife blade entering the neck in a transverse direction; sparkplug of an automobile in the frontal sinus for fifteen years; kewpie doll in the larynx for two days; full grown centipede developing in the nose; small pin remaining in the maxillary antrum fifty-nine years. Cases are also cited of objects removed which were nonopaque and had been mistaken for carcinoma due to being covered with granulation tissue. In this case a knife blade involved three separate anatomic locations (traversing the antrum, transfixing the inferior turbinate and the tip of the blade finally reaching and lodging in the superficial layers of the nasopharynx). The patient was stabbed with a knife; the blade broke off and lodged in the nose and nasopharynx for six years. He had no symptoms for one year when he started having headaches, postnasal discharge and a foul taste in his mouth. Two attempts were made to remove the blade but both were unsuccessful. The blade was finally removed under topical anesthesia and direct vision with a head

mirror. Three days after operation the discharge had ceased and the patient was entirely asymptomatic. 11 references. 3 figures.—*Author's abstract.*

Treatment of Maxillary Sinusitis by Instillation of Penicillin. *Alfred Walford, Cambridge, England.* J. Laryng. & Otol. 63:36, January 1949.

Some cases of acute maxillary antritis and most cases of subacute and chronic maxillary antritis require some form of surgery. It is felt that the mucosa should be left undamaged and the normal anatomy preserved to the maximum. Instead of repeated antral puncture, a curved cannula is placed in the antrum and left there for five days. Twice daily through this the antrum is aspirated and well irrigated with normal saline. The saline is displaced by a syringe full of air and 150,000 units of penicillin in 3 cc. of glycerin of tragacanth are introduced. The canula is closed externally with a metal bung. Both antrums can be treated at the same time but aseptic technic is needed for both aspiration and instillation. The treatment is tolerated well by adults and children but is probably ineffective in chronic cases where there is considerable mucosal change. 1 figure.

Malignant Tumors of the Nose and Nasal Accessory Sinuses. *LeRoy A. Schall, Massachusetts Eye and Ear Infirmary, Boston, Mass.* J.A.M.A. 137:1273-76, Aug. 7, 1948.

Symptoms of cancer in this area are hemorrhage, nasal obstruction, pain referred to the teeth, painless swelling, paresthesia or anesthesia of the cheek and exophthalmos. The first two are the usual symptoms when the lesion is limited to the nasal cavity. The obstruction is usually unilateral and is the basis of the axiom that any unilateral nasal obstruction caused by a growth should be considered malignant until proved otherwise by microscopic examination. Hemorrhage may not occur and obstruction be the only early symptom with slow growing tumors. The growth sometimes resembles an ordinary nasal polyp but excessive hemorrhage on removal should suggest malignancy. Every specimen should be examined microscopically. New growths on the hard palate or superior alveolus have early swelling but little pain even with extensive ulceration and fistulization. Tumors of the posterior superior wall of the maxillary antrum show paresthesia or anesthesia of the corresponding cheek and often have pain referred to the teeth so that they obtain dental treatment. Superimposed infection may cause early pain referred to the cheek. The growth extends into the nasal cavity as it enlarges and may block the entire nostril, extending into and destroying the maxillary bones, with erosion of the anterior face of the maxillary antrum or destruction of the orbital rim. Biopsy is important in these cases as treatment depends upon the type of tumor. The author does not consider a frozen section at the time of operation reliable. An exploratory operation such as a lateral rhinotomy or external canine fossa operation on the maxillary antrum is advisable and justifiable. The usual roentgen examination shows a late stage of cancer with bone destruction. Repeated early roentgenograms should be made in suspicious

cases in order to obtain an early diagnosis. Treatment consists of surgery, irradiation or both combined. A radiosensitive anaplastic new growth may be treated by radiation alone as either external radiation or radium. Adequate drainage is necessary for superimposed infection. Interstitial radiation by direct implantation of radium needles into the tumor has been useful. Surgery followed by radiation or direct radium implant in the operative field followed by external radiation is the preferred treatment for low-grade lesions. Adequate exposure is necessary for any operation. A lateral rhinotomy is sufficient for growths confined to the nasal cavity. After removal of the tumor, the cavity is lined with petroleum gauze and packed with narrow strips of gauze in which radium (in platinum or steel needles) is embedded. At least 1 cm. should be left between the septum and the radium and the septum further protected by at least a 1 mm. lead shield. The approach to sinus tumors varies with point of maximum involvement. Approach through the orbit by exenteration of its contents is best if there is exophthalmos. Removal of the orbital floor permits exploration of the antrum and removal of the lateral orbital wall, gives easy access to the frontal sinus and permits exenteration of the ethmoidal labyrinth. Lesions of the superior alveolus or hard palate are approached from below by resection of the superior alveolus with half or all the hard palate. A modified Moure incision is used for extensive sinus involvement. The entire operative cavity should be desiccated with the coagulating current because removal of cancerous growths in the nasal sinuses is essentially a curettage and tends to cause dissemination. Local insertion of radium is recommended to destroy possible scattered cancer cells. The orbit is protected with a 1 mm. lead shield, the cavity lined with petroleum gauze and then packed with at least 1 cm. of gauze for protection. Radiation reaction sometimes causes extremely painful exophthalmos which requires orbital exenteration. After-care consists of keeping the cavity clean and using a nasal irrigation at home with frequent 1:10,000 potassium permanganate spray. The discharge stops in two or three months. These studies showed that treating these cases surgically followed by extreme radiation or radium implants in the operative cavity gave them better than a 2 to 1 chance of five year survival as compared to those primarily treated by radiation. 1 table.

Malignant Disease of the Paranasal Sinuses. *F. C. W. Capps, St. Bartholomew's Hospital, London, England.* Ann. Roy. Coll. Surgeon 4: 38-47, January 1949.

Primary malignant disease occurs only in the maxillary antrum or ethmoid cells but usually extends far beyond the site of origin. It is convenient to group together all tumors which involve either a sinus alone, the upper jaw generally or the nasal passage behind the vestibule and anterior to the posterior choana. Early symptoms are absent and there may be no pain until the disease is advanced. The first sign is a swelling of the face over the antrum or fullness and obstruction of the corresponding side of the nose. The swelling increases towards the orbit, the mouth

and into the sphenomaxillary fossa. The affected nostril may be obstructed completely. The bony wall may be destroyed and protrusion may occur, with affection of the soft parts around the bone. In a series of 51 cases, the first symptoms included polypus or nasal obstruction, pain, bleeding or discharge, epiphora, diplopia, swelling of cheek and palate, displacement of the eye and broadening of the nose and swelling as a result of injury. Absolute obstruction of a nasal passage from a new formation is almost pathognomonic of malignancy. A rapidly increasing obstruction calls for investigation. Roentgenograms are useful in diagnosis. A malignant growth gives a dense, ill-defined shadow and there may be destruction of the bony walls of the nasal passage or maxillary antrum. For pathologic examination it is important to get a specimen from deep in the growth. The differential diagnosis must be made from syphilis, tuberculosis, benign growths, foreign bodies, rhinoscleroma and Boeck's sarcoidosis. Pure surgery is a thing of the past. Surgery must be done by diathermic cutting and coagulation, unless a lateral rhinotomy through unaffected skin is being done. It is advantageous to leave as much of the palate as possible. Deep roentgen radiation, teleradium, interstitial radium and radon are used as well as postoperative intercavitary radium. Radiation in itself is inadequate and it must be combined with electrosurgery. It is uncertain when the radiation should be employed. The results and prognosis have improved greatly. They would be even better with an earlier diagnosis. Extensive, primary, highly malignant tumors often give better results than equal sized, low-grade malignant growths. One in 10 cases will lose an eye. Considerable after-care is necessary. Crusting and sequestra need constant attention. Cheek, nose, eyesocket and other similar deformities are best closed by plastic flaps but palatal deficiencies are better repaired by dental obturators. 8 references. 3 figures.

The Röntgen Ray Examination of the Paranasal Sinuses with Particular Reference to the Frontal Sinuses. *Sölve Welin, Caroline Hospital, Stockholm, Sweden.* Brit. J. Radiol. 21:431-37, September 1948.

As the frontal sinuses are the most difficult to examine clinically, the diagnostic roentgenogram is important. Practically, however, these sinuses are difficult to evaluate radiographically as well. Two new projections utilized at the Caroline Hospital for five years have aided in more accurate interpretation and reliability of the findings. The primary aim in selection of views is to optimally project a certain sinus and at the same time to judge the other sinuses in as many projections as possible. The projection must be readily duplicated on control studies. Horizontal rays are utilized where possible. The Lysholm skull table is useful especially when stereoscopic views are necessary.

Projection 1:—erect position, forehead and nose touching skull table which is inclined 30 degrees from the vertical, horizontal ray centered to midnose; *projection* 2:—erect position, nose and open mouth touching skull table inclined 20 degrees from vertical plane, horizontal ray centered to upper lip; *projection* 3:—erect or recumbent position, lateral view, horizon-

tal or vertical ray centered to corner of eye; *projection* 4 (new):—"overshot axial projection", erect or recumbent, head markedly extended to project mandible anterior to frontal sinuses, submento-vertical direction of ray (A-P depth of frontal sinus is demonstrated in midline as well as laterally and thickness of sinus walls can be determined); *projection* 5:—erect or recumbent position as in projection 4, head not so markedly extended, submento-vertical direction of ray; *projection* 6 (new):—lateral recumbent position, (right or left side down), P-A projection with horizontal rays centered as projection 1. In this projection changes in position of the densities and air bubbles will definitely establish the presence of fluid in the sinuses. Variations in opacity of parts of the frontal sinuses can be due to variation in depth of sinus, bone plate thickness or irregular bony sclerosis and can simulate absent sinuses or intrinsic sinus pathology. The "over-shot axial projection" complements the P-A projection. Frequently a density in the base of the frontal sinus with a horizontal upper limit, as seen in projection 1, is difficult to differentiate if due to bone alteration, thickened membrane or fluid. Projection 6 is of marked aid in this case. To graphically demonstrate on the film the lowest portion of the part, a special R.L. marker in a circular radiolucent container is used. A small freely movable pellet enclosed therein will sink to the lowest part of the box and its position can be recognized on the films. 1 reference. 11 figures. 6 diagrams.—*Author's abstract.*

Benign Cysts of the Antrum, Originating from the Jaw or Teeth. *W. A. Newlands, Tarrytown, N. Y.* Laryngoscope 58:402-430, May 1948.

Peridontal cysts, of which radicular (root) cysts are the most common type, originate in root granulomas resulting from a chronic periostitis; this is secondary to pulpitis from dental caries. Such granulomas usually develop at the root apex and tend to be symptomless. They suppurate when they become acutely infected. They act as a protective wall against further spread of infection from the pulp cavity. The granulomas may extend into the antrum where they will produce an empyema if there is a severely infected cyst. In development a cyst cavity forms from hydropsical degeneration of the central part of the granuloma; the cyst advances in all directions. The causative factor in granuloma is infection by bacteria. A diagnosis between granuloma and cyst cannot be made clinically or even roentgenographically unless it is very large. The diagnosis is made by the pathologist. In a granuloma there is a connective tissue wall containing granulocytes, lymphocytes and plasma cells; In a radicular cyst the wall is present but its inner part is lined by stratified squamous epithelium. Dentigerous (follicular) cysts originate in retained or supernumerary isolated tooth germs. Their origin from roots is evident from teeth projecting into the cystic cavity. They are common during the first and second decades and their size is variable. These cysts must be differentiated from empyema of the maxillary sinus and from cysts of the mucous membrane. They usually are symptomless except when they become highly infected. They are evidenced by a protrusion of the bony wall toward the canine

fossa with parchment-like crepitation. Where they rupture and leave a tract, lipiodol visualization can be done. Diagnosis of dentigerous cysts is easy with roentgenograms. Treatment varies from extraction of the offending tooth, combined with incision of the buccal membrane and dissection of a small cyst, to a partsch operation. Another problem is the treatment of large cysts which not only obliterate the maxillary sinus but also extend under the nasal floor. If a Partsch operation is done, the postoperative course may extend over months to years. If a Caldwell-Luc operation is done, the cystic area beneath the nasal floor constitutes a pocket where exudates collect. Good results are obtained by a two-stage method, the first involving a Partsch operation exposing the antrum or extension of the cyst cavity but not uncovering it completely on its labial aspect. It is then gauze-packed until that part of the cavity beneath the nasal floor is obliterated. The Caldwell-Luc procedure is then undertaken. Where a part of the cyst wall is left to prevent fistulas or to shorten the postoperative course, it is essential to examine microscopically that part of the cyst wall which was removed. Two illustrative cases are described. 21 references. 15 figures.

Treatment of Infection of the Frontal Sinuses and Its Complications. *M. F. Arbuckle, Washington University, St. Louis, Mo.* Illinois M. J. 95:27-32, January 1949.

The treatment of sinus disease has undergone marked changes in recent years. Many cases recover without medical treatment; early cases usually are cured rather quickly, in neglected cases osteomyelitis of the frontal bone and sometimes supraorbital fistula or brain involvement may develop. Practically all cases of frontal sinus infection have a history of a cold with pain in or above the eye which characteristically occurs about the same time every day in the early morning. Swelling of the nasal mucosa blocks drainage from the sinus, causing pain and probable extension of infection. Shrinking the mucosa is followed by profuse drainage and pain relief. Cure of this condition has been expedited greatly by treatment with the sulfonamides and/or penicillin. Osteomyelitis and abscess of the frontal bone may develop in neglected cases and require surgical drainage. The sulfonamides or penicillin may cure early osteomyelitis without abscess but neither will cure an abscess. In such cases chemotherapy must be carried out longer and in larger doses than ordinarily necessary. The history, physical and roentgenographic examinations are most important in diagnosing osteomyelitis of the frontal bone. Swelling over the sinus and inside the nose is important. The periosteumswells, landmarks are obliterated and the sinus area becomes excessively tender. Roentgenograms first show haziness over the frontal sinuses, sometimes with obliteration of the borderline, followed by an edema of the scalp and motheaten appearance of the bone. Development of brain abscess is often difficult to diagnose, usually because it is in the frontal lobe. These patients tend to become stuporous, falling asleep in the examining chair. They are extremely irritable, fussy and characteristically delay in answering ordinary ques-

tions such as the time, hesitating as though they did not understand and then answering correctly. Pain usually is relieved if a fistula forms but radical operation is the only adequate treatment. Intranasal or cosmetic surgery must be abandoned in these cases as it is a question of saving life and deformity can be corrected afterwards if necessary. A wide incision around the orbit is preferred, extending up the middle of the forehead if necessary so that the entire bone is exposed and all diseased bone completely removed. Large doses of penicillin are required for two or three weeks and probably also sulfonamides. Seven illustrative case histories are presented. 9 figures.

The Treatment of Chronic Sinusitis in Children. *Vernon deBoissiere, Homoeopathic Hospital of Montreal, Montreal, Que., Canada.* Canad. M.A.J. 60:14-17, January 1949.

The two methods the author has found most satisfactory in the elimination of sinus infections are: (1) roentgenotherapy; (2) Proetz displacement with penicillin 1:200 in physiologic saline and instillation of a vasoconstrictor in an aqueous physiologic solution. The eyes are covered with a lead disk to prevent a mild conjunctivitis and to protect the eyelashes and eyebrows. The machine used is a 200 kv. and 15 ma. The filter is ½ mm. cu. and 3 mm. al. There is a daily dose of 70 r in any one port (two minutes duration), for four consecutive days. Three ports are used covering all the sinuses. On the first day of treatment the port is directed to the anteroposterior position, on the second day to the right lateral, on the third day to the left lateral and on the fourth day back to the anteroposterior again. A rest period of ten days is allowed before the second course of irradiation is resumed but only three doses of 70 r are given. During this ten day rest period Proetz displacement with penicillin and the instillation of a vasoconstrictor are instituted. The theory of this principle is that a mild inflammatory dose of roentgenotherapy is given of such strength tending to produce two results: (1) to reduce the lymphoid tissue which proliferates and tends to impede drainage in children; (2) to promote resolution of the existing inflammatory process in children and adults On completion of the second course of roentgenotherapy the vasoconstrictor drops are continued for approximately one week, the clinical findings are much improved and recovery from the infection is generally complete by the end of the week. 2 references.—*Author's abstract.*

3. Surgery

Hemangioma Ossei of the Facial Bones (*Gli emangioma ossei del massiccio facciale*). *Piero Meda, University of Milan, Milan, Italy.* Arch. ital. di otol. 59:305-24, Fasc. 6, 1948.

Three cases are reported. One of these patients already has been reported by Meda (*Chirurg. July-Aug.*, 1947.); it is reproduced here a second time, for purposes of comparison. The patients were middle aged and the condition had been present for a number of years. Each patient

stated that she noted an increase in pressure and pain coincident with the period of menstrual tension. All came from the same locality in Italy and 2 came from the same neighborhood, suggesting the possibility of some hereditary influence. In 1 patient the lesion was situated at the nasofrontal angle; in 1 the lesion was located in the left nasal fossa with the pedicle attached to the septum; in 1 the tumor had protruded into the left nasal fossa but had originated from the ascending ramus of the left maxillary bone. In each case probing disclosed the bony, porous, easily bleeding character of the tumor. In the maxillary case the possibility of a traumatic etiology was suggested by the history of the preexistence of a suppurative condition of the left lacrimal passages. Of course everything concerned with this form of vascular anomaly is of special importance since it may have some bearing on the question of surgery versus irradiation therapy. This tumor is known to be sensitive to roentgen and radium rays and in the first of the reported cases the condition should have been recognized because of the typical roentgen findings (honeycomb appearance; radiating spicules of shadow); physical findings (bony, resilient or parchment-like sensation and bleeding on probing) and because of the general history of the condition (menstrual influence on the new growth). In the other 2 cases the diagnosis could not be made from the roentgen picture and, although there was a history of local menstrual phenomena, the condition was not recognized. Surgery was accomplished successfully in all of these cases and the growths have not recurred (six month's observation period), nevertheless the author concedes that, should the condition be diagnosed correctly preoperatively, a trial of irradiation therapy could do no harm and would perhaps be indicated. 28 references. 8 figures.

The New Technique for Local Anesthesia in Sinus Surgery. *Wm. Lawrence Gatewood and C. Augustus de Vere, New York, N. Y.* Laryngoscope 58:848-60, August 1948.

To anesthetize skin, subcutaneous tissue, periosteum and bone of the middle third of the eyebrow, forehead, upper eyelid and anterior scalp, 1 cc. of solution is injected into the skin immediately over the supraorbital foramen, with the needle point in direct contact with the periosteum of the bone in this area. To anesthetize the lateral third of the skin, subcutaneous tissue, periosteum and bone of the eyebrow, upper eyelid and scalp, 1 cc. of solution is injected into the skin directly over the superior orbital ridge 2 cm. lateral to the supraorbital foramen. The needle is directed through soft tissue until it reaches the periosteum and bone of the orbital ridge at a 5 mm. depth. Anesthesia of the area supplied by the infratrochlear nerve is done in the preliminary injection of the anterior ethmoid nerve. The supratrochlear nerve is blocked indirectly with a supraorbital injection. To anesthetize skin and subcutaneous tissues of the lower eyelid, skin and cartilage on the lateral nose, infraorbital tissues and the skin, labial mucosa and gum of the upper lip, 2 cc. of solution is injected; the mucobuccal fold above and lateral to the apex of the upper second bicuspid is punctured and the needle advanced 2 cm. up to the infraorbital

foramen. The needle bridges the depression of the canine fossa. The anterior superior alveolar nerve is blocked in this injection as well as the infraorbital nerve. To anesthetize the mucous membrane and gum of the upper molar region, 2 cc. of the solution is injected by inserting the needle into mucobuccal fold at the apex of the root of the second molar and pushing up, back and in for 2 cm. To anesthetize the mucosa of the anterior ethmoid cells and frontal sinus, the anterior half of the middle and inferior concha and meatus, the anterior part of the ethmoid cribriform plate and the anterior and superior parts of the nasal septum, 1 cc. is injected 1 cm. above the inner canthus, pushing the needle along the medial wall for 2 cm. If the needle is pushed another centimeter posteriorly, along the medial orbital wall, the posterior ethmoid nerve is injected; this will anesthetize the sphenoid sinus, posterior ethmoid cells, posterior cribriform plate and posterior ethmoid. The needle must not advance over 3 cm. To anesthetize the mucosa of the posterior two-thirds of the nasal fossa and septum, upper gum and maxillary sinus, the needle is inserted into the cheek skin where two lines intersect; one extends vertically down from the lateral orbital rim and one laterally from the lower border of the nasal alar cartilage. The needle is advanced up, in and back on the posterior maxillary tuberosity, to a depth of 4 cm. To inject the sphenopalatine ganglion and maxillary nerve, the mouth is opened and mucosa punctured at the highest point between the gum tissue and inner cheek, above and lateral to the upper third molar roots. The periosteum over the posterolateral surface of the maxillary tuberosity is followed. The needle is advanced up, in and back to a depth of 3 cm. The needle must not pass perpendicularly. Injections are made in all cases with 2 per cent procaine containing epinephrine, U.S.P., 8 drops to the ounce. 3 references. 9 figures.

Some Pitfalls in Sinus Surgery. *J. Jerome Littell, Indianapolis, Ind.* Laryngoscope 58:396-401, May 1948.

Sinus surgery offers many pitfalls. Discriminating judgment is needed to determine susceptibility to surgical improvement. Allergic states are among the most important systemic conditions responsible for an ill-functioning nose, and failure to recognize its presence accounts for many surgical disappointments, especially where there is a combination of allergy and infection. Other factors, such as irritating fumes, unhealthy living habits, faulty diets, etc., must be recognized and evaluated. All present or anticipated pathology must be appreciated to avoid disappointment. There may be single isolated areas of infection in the nose but more usually there are multiple ones; a chronic sinusitis may spread to adjacent regions. Chronic infection of the olfactory fissure, with or without ethmoiditis, is the least appreciated defect needing surgical correction; the pathology is usually not visible. Chronic ethmoiditis which may require surgery may be present and frequently unrecognized. Thickening of the lining of a maxillary sinus without frank pus may be overlooked but can be revealed roentgenographically. In surgery, the nasal architecture must be so re-

constructed that the nasal structures will not only recover but will never again be capable of harboring infection. There must be a proper selection of operative procedures and surgery must be adequate. A substantial proportion of chronic nasal and sinus infections are corrected by adequate ventilation and drainage. Marked uncorrectable allergy with irreversible hyperplastic membranous changes is an exception. The sphenoid and maxillary sinuses are ventilated best by window resections; chronic frontal sinusitis often is cured by adequate ventilation from below; in some cases an additional incision is needed at the lateral border of the brow. Only necessary surgery of the simplest type should be done during acute infection. The submucous resection must be done carefully. The upper part must be made straight. The septal tubercle must be cleared away up to the nasal dorsum. Sufficient space must be attained in the nasal roof. The cells, in intranasal ethmoidectomy, must be thrown into one single wide cavity with no intervening septums and no membrane left. An impatent sphenoid always should be made patent. When in doubt an antrum window should be made. An obstructive lower turbinate should be modified at its anterior and lower portion. The incision margins in the canine fossa after a Caldwell-Luc must be sutured together. In radical surgery all infected membrane must be removed throughout.

LARYNGOLOGY

1. Larynx

Hirudo Medicinalis (Medical Leech) in the Larynx. An Interesting Clinical Condition Found in Iraq. *Daoud Salman Ali, Baghdad.* J. Laryng. & Otol. 62:752-53, December 1948.

Ten patients in the past three years have presented themselves complaining of: (1) hoarseness; (2) attacks of coughing; (3) hemoptysis; (4) occasional dyspnea. All patients lived in northern Iraq where it is the custom to drink water from running springs. In each case the patient had felt something stick in his throat soon after drinking. Examination showed that a dark green elongated body was sticking to some part of the larynx, usually the true vocal cord. It hung downwards into the trachea. The body was observed to undergo contractions and the organism could be seen more clearly by using an anterior commissure laryngoscope of the Jackson type. The diagnosis was Hirudo medicinalis, swallowed in the act of drinking. Removal needs care or the animal may drop down the trachea. Local anesthesia of 10 per cent cocaine is employed and the worm is seized firmly with wide-jawed forceps. The worm should not be pulled but will relax its hold on the mucosa if steady pressure is applied for a few minutes. If the worm is already hanging down the trachea, attached to the under surface of the cord, the patient is put into Trendelenburg position, and on forcibly breathing the worm slips proximally between the cords and can then be removed. The symptoms immediately disappear on removal.

Lipoid Proteinosis. A Report of Two Cases and Review of Literature. *Raymond A. Lower, Spokane, Wash.* Laryngoscope 58:1118-26, October 1948.

The term lipoidosis cutis et mucosae is given to a syndrome characterized by lipoid infiltration into the mucous membranes and skin. The infiltrations occur commonly in the mucous membranes of the lips, mouth, tongue, pharynx, larynx and vulva. Skin changes occur most often on the elbows, fingers, knees, face and along the eyelid margins. The disease is exceedingly rare: only 29 cases have been reported. Familial tendencies have been observed and there is also a diabetic tendency in conjunction with the disease. Lipoid proteinosis begins usually at an early age. Hoarseness is the earliest and outstanding symptom. The condition is progressive with nodular and hyperkeratotic lesions of the skin appearing later. The facial skin has a yellowish-waxy color, with a pock-like appearance. Superficially the facial discoloration may appear like ordinary suntanning. The scalp, hair and beard are usually sparse. The eyelid edges have many small, translucent, bead-like nodules forming a moniliform arch. The lashes tend to be lost. The vermilion of the lips shows yellowish to white infiltrations within the mucous membrane; some are raised and nodular; others are small, pinpoint papular beneath the surface. The skin at the angle of the mouth is fissured and slightly keratotic. The finger surfaces show many fine, pin-point sized excrescences, with mulberry-like processes. The external surfaces of the elbows and knees show large, elevated, ichthyoid keratotic lesions. The mucous membrane of the lips, particularly of the lower lip, has widespread yellowish-white deposits. On the soft palate there are yellowish, firm, infiltrated plaques. The tonsils and pharynx have glistening deposits, with many depressed soft scars. The tongue has a stiff, wooden appearance and the dorsum appears smooth and atrophic; movement is limited. The larynx has many yellowish to white plaques. The vocal cords are thickened and show the same infiltrative lesions as the rest of the laryngeal mucosa. Histologic changes reveal a marked paucity of blood vessels, with dilated and thickened capillaries. There is dense infiltration of the skin with homogeneous mantles around the sweat and sebaceous glands and the thickened wall vessels. There is no formation of giant foam or xanthoma cells and no evidence of necrosis. The differential diagnosis should be made between lipoid proteinosis and other xanthomatoses. The prognosis is obscure because of the lack of information. Therapy is of little value. Two illustrative case histories are reported. 10 references.

The Treatment of Laryngeal Papillomata in Childhood. *H. Zalin, Liverpool, England.* J. Laryng. & Otol. 62:621-26, October 1948.

Papillomatosis of the larynx is uncommon in infancy and childhood. In children papillomas are multiple. Their removal is followed by rapid recurrence but there is no tendency to malignant degeneration. If they survive to puberty a dramatic recession occurs. The symptoms are hoarseness and laryngeal dyspnea. The mortality is high from respiratory complica-

tions. Death results from asphyxia or pneumonia. Treatment involves: (1) relief of urgent symptoms, particularly asphyxia; (2) clearance of the laryngeal passage when necessary; (3) avoidance of local injury and its sequelae. Some workers employ diathermy with the positive electrode using suspension laryngoscopy and treating the papillomas as they redevelop. Avulsion of the tumors with a forceps, knife, curet, snare or punch has been advised. Irradiation is condemned as being dangerous to the delicate growing laryngeal cartilages. At one time tracheotomy alone was used; it is necessary for urgent dyspnea and in the first stage of treatment of most cases. Under local anesthesia, tracheotomy has no mortality and allows general anesthesia to be given with ease and control, for endolaryngeal inspection and clearance. In the face of dyspnea all workers agree on tracheotomy. Local removal, repeated in some cases at monthly intervals for years, may well be followed by retention of perfect function. Recurrence following removal has been prevented by the local application of estrogen, through direct laryngoscopy or spray. From five to eleven applications of 0.1 cc. of 10,000 units of estrogen per cubic centimeter of oil applied weekly have given good results. Three cases are cited in which estrogen therapy was employed. The results were excellent in 2 cases and progress is being made in the third case which has now been treated for five months. 16 references.

The Significance of Paralysis of the Larynx. Its Surgical Correction in Bilateral Cases. *Fletcher D. Woodward, University of Virginia Hospital, Charlottesville, Va.* Virginia M. Monthly 75:449-51, September 1948.

Paralysis of the larynx may be partial or complete, unilateral or bilateral and caused by either central or peripheral nerve lesions. Clinical details vary with degree of motor and sensory laryngeal involvement. The differential diagnosis of true paralysis from functional neurosis or fixation of a vocal cord by laryngeal tumor or inflammation is not usually difficult. Hoarseness is the most common symptom and voice weakness, dyspnea, stridor or strangling may occur but about one-third the cases have no symptoms. Symptoms vary with variety of the cases. Both cords are usually in the median line in bilateral cases so that voice production is good but dyspnea and stridor are present and death from strangulation may occur, especially during an intercurrent respiratory infection. Tracheotomy should be done on all bilateral cases. The prognosis should not be determined under six months because many cases recover. Treatment should be directed towards a specific cause, if present; prognosis then depends on the response to treatment. Thyroid surgery is responsible for many cases of laryngeal paralysis and the larynx should always be examined before and after thyroidectomies, speech being no indication of the condition. Bilateral paralysis should be suspected when obstructive dyspnea appears after removal of the tube for intratracheal anesthesia. The tube should be reintroduced until a tracheotomy can be done. Operation may be required to restore the airway and preserve the voice. Best results have been obtained by the author with the DeGraaf Woodman operation, which is also the simplest. In this, the posterior thyroid border is exposed, the thyroid cartilage disarticulated from

the cricoid and retracted medially so that the arytenoid-cricoid articulation is seen clearly. The arytenoid cartilage is removed, the arytenoid muscle cut and a suture used to make lateral retraction upon the bed of the arytenoid cartilage. This operation has been successfully used in 4 cases, the voice being preserved and an adequate airway obtained in each case.

Peripheral Laryngeal Paralysis. Complication of Collapse Therapy (*Les paralysies laryngees peripheriques, complication de la collaposotherapie*). *Piaget and Seguin.* J. de med. de Lyon 29:657-65, Sept. 20, 1948.

Of 4,779 patients with pulmonary tuberculosis treated from January 1944 to September 1947, 9 cases (approximately 0.24 per cent) were found in which laryngeal paralysis occurred spontaneously. In these cases the paralysis was of the peripheral type and involved only one side of the larynx, usually the left. In most of these cases the injury to the laryngeal nerve was due to pathologic changes in the mediastinum resulting from tuberculous periadenitis; in a few cases to lesions of peripleuritis. While a few cases of peripheral laryngeal paralysis following pneumothorax have been reported in the literature, the authors found no such cases in this series in spite of the fact that this procedure was employed frequently. In cases in which section of pleural adhesions is necessary to complete the pneumothorax, peripheral laryngeal paralysis is more likely to occur. In 1,340 such operations there were 2 cases in which paralysis of the vocal cord occurred on the side operated on. Two other cases of the same type are reported from another series. In such cases it is probable that the paralysis of the recurrent nerve is due to injury of its fibers by excessive heat from the cautery knife used for cutting the adhesions. In 170 phrenicectomies on patients with pulmonary tuberculosis done during the period of this study, there was 1 case of paralysis of the vocal cord on the operative side; in this case injection of alcohol into the phrenic nerve had been done four months preoperatively. In 157 cases of extrapleural pneumothorax, 210 cases of primary thoracoplasty with apicolysis (Semb) and 22 cases of secondary thoracoplasty, no cases of laryngeal paralysis occurred during the period of this study. One case has been seen since September 1947 in which paralysis of the vocal cord on the operative side followed thoracoplasty with apicolysis. Another case of this type is also reported from another series. In most of the cases the paralysis of one vocal cord has been well or fairly well compensated by the opposite vocal cord. 3 references.

Streptomycin in Treatment of Laryngeal Tuberculosis. *Ben T. Withers, Houston, Tex.* Ann. Otol., Rhin. & Laryng. 57:769-83, September 1948.

Twelve patients with advanced pulmonary disease were treated with streptomycin. An audiogram, Kobrak caloric test and Romberg test were run at the beginning and end of therapy to estimate toxic effects. One gram of streptomycin per day divided into two doses was given intramuscularly at twelve hour intervals for ninety days. Aerosol spray or other

local treatment with the drug was not employed. All patients showed marked improvement in laryngeal lesions and 10 of the 12 were cured of this complication (edema subsided and ulcerations and granulations disappeared). Painful swallowing and hoarseness subsided in most cases within the first fifteen days. Such early loss of odynophagia allowed restoration of better dietary measures, a factor of importance in the general management of the tuberculous patient. Oral thiamine hydrochloride, 10 mg. three times a day given simultaneously with streptomycin treatment in 6 cases did not accelerate healing of the larynx. Effect of streptomycin therapy on the pulmonary disease was not evaluated in this study. Possibly the most important observation was the lack of toxic manifestations when such a small dosage of streptomycin was given. Toxic effects reported by others using a larger dosage (1.8 to 3 Gm. every twenty-four hours) include: positive Romberg test with ataxia, low pitched tinnitus, prolonged caloric response, vertigo, nausea, vomiting and loss of hearing. On the 1 Gm. every twenty-four hours dosage, divided into two injections, no patient showed change in the audiogram, Kobrak caloric or Romberg tests. Two patients had slight transitory dizziness about the eighth week, lasting a few days but not severe enough to interfere with meals. 28 references. 10 figures.—*Author's abstract.*

Laryngectomy. *Louis H. Clerf, Jefferson Hospital, Philadelphia, Pa.* Surg., Gynec. & Obst. 86:197-202, February 1948.

Laryngectomy is indicated in all cases of carcinoma confined to the larynx, except those involving the anterior and middle thirds of a vocal cord without any extension to the opposite side and without fixation of the cord. Fixation of a vocal cord indicates infiltration of its musculature by the carcinoma, which renders conservative surgery inadequate. Metastasis and extralaryngeal extension affect the prognosis unfavorably but even with such complications the prognosis with radical operation is better than with palliative procedures. Preepiglottic extension of carcinoma of the epiglottis has been treated by radical removal of the preepiglottic space and laryngectomy with good results. Metastasis to the deep cervical lymph nodes in the region of the bifurcation of the carotid artery has been treated by laryngectomy and block dissection, a procedure which the author considers gives better results than laryngectomy and irradiation. Since 1942 laryngectomy and block dissection have been done as a one stage procedure; the first patient treated by this method has showed no recurrence for five and one-half years. For laryngectomy, the author prefers local infiltration anesthesia supplemented by barbiturates, except when block dissection is also done, for which inhalation anesthesia, preferably by intubation, is employed. The technic of laryngectomy is varied to meet different requirements. Muscle attachments and even the ribbon muscles are removed. The use of the Barretto clamp has been discontinued in the past sixteen months. With the author's present technic, the larynx is removed from above downward; after the larynx is skeletonized and the mucosa of the epiglottis is freed along its lingual aspect, a nontraumatic O chromic suture

is passed through the mucosa and fascia between the base of the tongue and the epiglottis. This suture is tied and held taut, as the pharnyx is opened, preventing contamination of the wound from pharyngeal secretions. This permits adequate inspection of the lesion, especially any lateral extensions. The mucosa of the pharynx is sutured as its separation from the larynx is carried out, so that there is no contamination; and also aspiration of blood and mucus is prevented. Complete skeletonization of the larynx is completed, a second layer of sutures is placed corresponding to the pharyngeal constrictors and drainage tubes inserted, through a counter opening before the larynx is amputated. In 326 cases of laryngectomy, there were fourteen postoperative deaths (mortality of 4.3 per cent); six of these deaths were due to pulmonary complications and 8 to coronary occlusion, cardiorenal disorder or apoplexy. A large number of patients surviving laryngectomy can be taught to talk; others learn the use of mechanical or electrical devices, the author has had only 1 patient who failed to adjust himself postoperatively. If the carcinoma is confined to the larynx and the laryngectomy is adequate, the rate of five-year cures should be 100 per cent. If the anterior commissure or the base of the epiglottis is involved without extension to the preepiglottic space, the rate of five-year cures with adequate laryngectomy should be 90 per cent. With further extension of the carcinoma in these sites the rate of cure diminishes; subglottic carcinoma has a high mortality rate, because of metastasis to the lower nodes of the cervical chain and along the party wall. Carcinoma of a ventricular band, aryepiglottic fold or arytenoid usually has a poor prognosis, as it metastasizes early and is often not discovered until late. 8 references. 4 figures.

Anesthesia for Total Laryngectomy. *Anton C. Kirchhof and David C. Boals, U. S. Veterans Administration Hospital, Portland, Ore.* West. J. Surg. 56:590-91, November 1948.

A hazard in total laryngectomy is the maintenance of an airway and prevention of aspiration of blood or clots through the sectioned end of the trachea. A simple modification of endotracheal anesthesia equipment for total laryngectomy is described. An oral endotracheal tube with inflatable cuff is introduced under direct vision in the early part of the operation. After dissecting the larynx and upper trachea free, the endotracheal tube is pulled back to the vocal cords and the trachea sectioned across. A short piece of endotracheal tubing with a bevelled tip and with an inflatable cuff is inserted into the open end of the trachea and the cuff inflated. The short tube (3 to 4 inches long) is fitted with a standard elbow which contains a suction hole covered by a sleeve of rubber tubing. This connects in turn to a long rubber tube. The entire assembly is sterilized before use. After insertion of the tube and inflation of the cuff, the longer tube is given to the anesthetist who reestablishes the closed system with the anesthesia machine. If cautery is not employed, this anesthetic method is adaptable to any inhalation agent, since the switch from the oral endotracheal tube to the short tracheotomy endotracheal tube takes

only a few seconds. The oral tube is then removed completely. A nasal Levine tube is inserted into the esophagus before the operative area is closed. A suction catheter is employed through the hole in the anesthesia elbow to remove blood or mucus from the tracheobronchial tree. The suturing is completed before removing the short endotracheal tube. Then a regular tracheotomy tube is inserted. The system provides an airway, and also a dry, closed anesthetic during surgery. 2 figures.

Cancer of the Larynx. Five-Year Results of Radiotherapy. *Max Cutler, Chicago Tumor Institute, Chicago, Ill.* Radiology 51:509-20, October 1948.

Thirty-five per cent five-year cures were obtained in a series of 107 consecutive unselected cases of laryngeal cancer treated by radiotherapy (patients who died before five years of causes other than cancer are counted as having died of cancer). More than half the cases were inoperable. Among the operable cases beyond the scope of laryngofissure of which the only surgical alternative was total laryngectomy, radiotherapy effected 52 per cent five-year cures and among the inoperable group, 20 per cent are free of disease after five years. The five-year curability among the cases in which the cords were not completely fixed is 60 per cent. Based upon these and other results, these conclusions seem permissible: Radiotherapy is indicated in selected cases of laryngeal cancer. When the cords are freely movable or only partly fixed by the carcinoma, curability is high (60 per cent) and radiotherapy is the method of choice. Laryngectomy is indicated for intrinsic lesions with complete fixation of the cords occurring in good surgical subjects of good life expectancy, provided the fixation is caused by carcinomatous invasion and not by inflammation. If, after careful consideration of all factors, a decision between radiotherapy and laryngectomy remains difficult, a radiotherapeutic test or complete irradiation should be considered as the initial procedure. There is every reason to expect that further improvements in the technic of irradiation and earlier diagnosis will further diminish the necessity for total laryngectomy. 22 references. 2 tables.—*Author's abstract.*

Prosthetic Treatment of Traumatic Laryngeal Stenosis. *H. Fr. Fabritius, Rikshospital, Oslo, Norway.* Acta. oto-laryng. 36:226-29, Fasc. 3-4, 1948.

A patient who had been subjected to a laryngeal trauma nine years ago, and has since been forced to carry a tracheal tube in spite of repeated intralaryngeal interventions to procure passage of air is discussed. The patient has been treated with prostheses of gradually increasing size, molded after the interior of the larynx. The prostheses were prepared from acryl, a synthetic substance causing little or no reaction on the part of the soft tissues, and which may be left in the larynx for considerable time at a stretch. It was possible in this way to procure in the course of two months such satisfactory passage of air in the larynx, that the cannula could be removed and the tracheal opening closed. The voice had become

quite good. It may be added that subsequently 2 other patients have been treated with satisfactory results. In these patients the laryngeal stenosis was due to a previous inflammatory process. 1 figure.—*Author's abstract.*

Resection of the Trachea. An Experimental Study and a Report of a Case. *O. Theron Clagett, Mayo Clinic, John H. Grindlay, Mayo Foundation and Herman J. Moersch, Mayo Clinic, Rochester, Minn.* Arch. Surg. 57:253-66, August 1948.

Tumors of the trachea are not common lesions. Twenty-seven cases have been reported from this clinic. These tumors usually involve the lower third of the trachea. Forty-one per cent are squamous cell carcinomas. Cylindromas and adenocarcinomas are less common. The only treatment available in the past has been bronchoscopic removal of these lesions. Some attempts have been made in the past to resect the trachea in the experimental animal but have been unsuccessful. One of the more recently developed plastics, polythene, seems to offer some possibility as an agent which could be used to bridge the gap in the trachea after resection since this material is remarkably well tolerated by the tissues. Portions of the lower cervical or thoracic portion of the trachea were excised in 18 dogs and tracheal continuity was reestablished with molded polythene tubes. The polythene tubes were implanted surgically in the lower thoracic region of the trachea in 2 dogs and in the main bronchus in 2 dogs. Three dogs were killed at intervals after operation, 3 died of tracheal obstruction caused by defective tubing and 2 died of tracheal collapse after removal of the tubes. Ten dogs that had undergone resection of the trachea were still living with no disturbance of respiration after two and a half to thirteen months postoperatively. Bronchoscopic examinations have showed no retention of tracheobronchial secretions and little if any inflammatory reaction. Resection of the lower third of the trachea and right lung was performed on 1 patient for removal of a cylindroma of the trachea. The trachea was anastomosed to the left main bronchus with a molded polythene tube. The polythene tube fitted satisfactorily; there was no leakage of air. A tracheotomy was performed to facilitate aspiration of any secretions in the tracheobronchial tree. Postoperative course was satisfactory for four days. The patient was able to eat without difficulty and to talk when the tracheotomy was closed. There was a good deal of secretion in the tracheobronchial tree which required frequent aspirations postoperatively. After the third day patchy areas of bronchopneumonia appeared in the left lung and in spite of massive doses of penicillin and frequent aspirations of the tracheobronchial tree this pneumonia progressed and the patient died on the sixth day. Postmortem examinations revealed that the tube had partially blocked the left upper lobe bronchus and that this was responsible for the bronchopneumonia in the upper lobe. There was no evidence of mediastinitis or empyema. While this single case was a failure, experimental work suggests that in suitable cases resection of the trachea with reestablished continuity of the trachea with a polythene tube may be feasible. 3 references. 3 tables. 3 figures.—*Author's abstract.*

The Use of Tracheotomy in Pharyngeal and Respiratory Paralysis Following Diphtheria and Bulbar Poliomyelitis. *Henry McLorinan, Queen's Memorial Infectious Diseases Hospital, Melbourne, Australia.* M. J. Australia 2:765-66, June 19, 1948.

Five cases are reported. This is thought to be the first series of cases published in which this operation was done for these conditions. Two were pharyngeal and respiratory paralyses following diphtheria and 3 were bulbar poliomyelitis cases. Of these, 4 recovered satisfactorily; 1 died. This was a 7 year old boy with progressive bulbar poliomyelitis, who had a tracheotomy and subsequently was placed in a respirator. The recovery of the other children seemed to be influenced favorably by the tracheotomy. In 1 other case, the child was placed in the respirator following tracheotomy; in the remaining patients the operation rendered the respirator unnecessary. In an 8 year old boy with adductor paralysis, intubation was tried unsuccessfully before the tracheotomy was resorted to. Elective indications for tracheotomy in these conditions are dysphagia, dyspnea resulting from mucus collections in the throat and exhaustion and perhaps apprehension on the part of the patient. Absolute indications are stridor, dyspnea and cyanosis. The advantages of the method are: (1) creates a by-pass of the area in the throat where mucus collection is most troublesome; (2) simplifies suction; (3) rests the patient; (4) avoids use of respirator; (5) simplifies feeding.

Tracheotomy with Complication of Pneumothorax. *Ashton Thomas and Ned W. Holland, Louisiana State University School of Medicine, New Orleans, La.* New Orleans M. & S. J. 100:565-67, June 1948.

Two cases of pneumothorax following tracheotomy in children are reported. One of these patients, a 17 month old white male with left pneumothorax and emphysema of the left lung, recovered after the left pleural cavity had been tapped twice in twelve hours. The other child, a 2½ year old white female, with bilateral pneumothorax and mediastinal emphysema, did not recover although water trap drainage tubes were inserted into both pleural cavities and into the mediastinum. At autopsy the diagnosis was: exudative tracheobronchitis, bilateral pneumothorax with mediastinal emphysema and bronchopneumonia. The usual cause of pneumothorax following tracheotomy is considered to be the sucking of air through the tracheotomy wound into the mediastinum and subsequent rupture into the pleural cavity or cavities. The authors do the tracheotomy by cutting down on the bronchoscope, and avoid giving general anesthesia until the bronchoscope is in place. Care is taken not to make too small an incision and not to close the wound too tightly. The air passages are aspirated frequently during the procedure. After the pneumothorax has developed, if the symptoms are mild, the air may be expected to be absorbed but where tension pneumothorax develops decompression is necessary. The decompression should not be done too rapidly for fear of air embolism. Mediastinal surgery should be avoided if possible. Other conditions,

such as pneumonia or wound infection are treated with sulfonamides and penicillin. 10 references.

Hemophilus Influenzae Type B Epiglottitis or Acute Supraglottic Laryngitis in Children. *Alden H. Miller, Los Angeles, Calif.* Laryngoscope 58:514-26, June 1948.

The clinical and laboratory findings are reported of 49 patients who were admitted during the year 1946 with acute obstructive laryngitis. The discharge diagnosis revealed that 2 of the patients had diphtheria, 9 had laryngotracheobronchitis and 8 had Hemophilus influenzae type B epiglottitis or supraglottic laryngitis. This last disease must be considered in a differential diagnosis of acute obstructive laryngitis in children. Examination to make the differentiation involved a history of onset and course with emphasis on initial complaints as sore throat, dysphagia, hoarseness and dyspnea. The epiglottis was inspected by depressing the tongue and the larynx by indirect mirror examination or direct laryngoscopy. Material for smear and culture was obtained from the nasopharynx and epiglottis by swabbing the mucosa and the bacteria were identified. The 8 cases diagnosed as H. influenzae type B epiglottitis were differentiated readily from patients with acute laryngotracheitis. In the former there was abrupt onset of increasing respiratory distress. A sore throat or painful and difficult swallowing occurred early in the disease. The course was short, rapid and fulminating and frequently involved severe prostration, pale cyanosis and shock. Respiratory distress was mainly inspiratory, characterized by gulping for air. There was often inability to swallow. The diagnosis was almost certain by simple tongue depression which showed the characteristic fiery red and greatly swollen epiglottis and it was confirmed upon demonstrating the specific bacterium by capsular swelling with type-specific antiserum. The H. influenzae type B is always pathogenic but does not occur in patients with typical subglottic laryngotracheitis. The patients were treated effectively with early tracheotomy, type-specific rabbit antiserum (and later streptomycin) and sulfadiazine. Two illustrative case histories are presented. 13 references. 1 table.

The Superior and Recurrent Laryngeal Nerves. *Lawrence J. Lawson, Northwestern University Medical School, Chicago, Ill.* Quart. Bull. Northeastern Univ. M. School 22:356-59, Winter Quarter, 1948.

A 66 year old man was thought to have suffered a slight cerebral accident. The hearing in the left ear was diminished and the voice changed quality and became increasingly hoarse and fatigable. There was diminished sensation in the region of the lower pharynx accompanied by choking spells. Laryngoscopically the vocal cords adducted properly for phonation but failed to become tense. There was also some loss of mental power and muscular strength on the right side of the body. After an illness of fourteen months there had developed a marked loss of speech power, mental fogging, marked loss of muscular strength on the right side, increased choking and, finally, terminal pneumonia. At autopsy a tumor of the left

lobe of the brain was discovered. This growth extended from a section through the anterior commisure, backwards, to a section through the posterior quadrigemina. In places the tumor tissue had penetrated to the surface of the cortex of the cerebrum, in other places it was limited to the lower lamina. Microscopically the neoplasm presented the characteristics of both a spongioblastoma and an astrocytoma; the center was made up of a large cyst-like formation. The final diagnosis was spongioblastoma multiforme. The laryngeal symptoms are explained on the basis of a cortical irritation of the vagus and through this trunk to the superior and recurrent laryngeal branches. The superior branch caused the loss of sensation in the pharynx and the weakness of the cricothyroid muscle and consequent flaccidity of the vocal cords. The disturbance of function of the recurrent laryngeal branch produced the adductor spasm.

2. Pharynx and Nasopharynx

Foreign Body in the Nasopharynx. *Byron M. Merkel, Des Moines, Ia.* J. Iowa State M. Soc. 38:247-50, June 1948.

A rubber suction cup from the end of a dart shot from a dart gun into the patient's open mouth remained impacted in the posterior nasopharynx for eighteen months. Removal of the tonsils and adenoids had been done during this period, apparently without digital examination of the nasopharynx. Roentgen examination disclosed a thin shell shaped shadow in the nasopharynx, which could not be accounted for as the normal anatomic appearance of the region. Nasal vasoconstriction and suction removal of the discharges revealed the peculiar doughy mass at the posterior end of both inferior turbinates. The ears were essentially normal. Under sodium pentothal anesthesia the presenting portion (edge of suction cup) was grasped with a strong mouse toothed tonsil forceps and, using the finger as a fulcrum, extracted intact through the mouth. The case is presented with a plea that a routine digital examination be made of the nasopharynx, in cases where foreign body is suspected but not located by other means and that the roentgen examination of these patients be done as completely as possible. 5 references. 3 figures.

Malignant Tumors of the Nasopharynx. *Mercer G. Lynch, Tulane University School of Medicine and Ochsner Clinic, New Orleans, La.* New Orleans M. & S. J. 101:165-68, October 1948.

Cancer of the nasopharynx represents about 2 per cent of malignancies of the head and neck. Though not the most frequent, it is one of the most serious sites of upper respiratory malignant growth. Nasopharyngeal carcinomas may occur at an early age and are encountered more often in children and in patients less than 30 years of age than any other malignant growth of the upper respiratory or alimentary tract, but the average age range is between 40 to 45 years. Sex incidence is 9:1, male: female. Because of its location in the region of the pharyngeal tonsil, it is highly

anaplastic. The predominant types are transitional cell and lympoepithelioma. Primary tumor of the nasopharynx is manifested clinically by nasal obstruction, epistaxis, nasal discharge, chronic sore throat, postnasal pain, dysphagia, sensation of a lump in the throat and nasal speech. If located on the lateral wall, deafness is an early symptom. The most frequent site is high on the posterior wall of the pharynx and the lateral wall is the next commonest location. One of the characteristics of the later stages of the disease is a tendency to direct extension intracranially or intraorbitally. Intracranial extension occurs by direct erosion of bone or through the fossa of Rosenmuller. The cranial nerves involved in order of frequency are the sixth, third, fourth, fifth, seventh and second. Intraorbital extension occurs by way of the foramen lacerum, carotid groove and the superior orbital fissure. Orbital invasion results in exophthalmos, ophthalmoplegia and eventual blindness. Cervical metastasis is present in about 80 per cent of cases because of a tendency to metastasis early in the course of the disease. Most frequently involved are the upper deep cervical nodes lying below the tip of the mastoid and next are those over the carotid bulb. Then the disease extends to the posterior chain in the posterior triangle. The extent of metastasis determines prognosis. If the upper deep nodes are involved, prognosis is fair; if the posterior triangle or deep cervical nodes are involved, prognosis is poor; prognosis is favorable only in the early stages before metastasis has occurred. Site of origin is readily accessible but is too often overlooked. It may be visualized through the nasopharyngoscope or laryngeal mirror if the tongue is depressed and the soft palate retracted. Biopsy should be performed on suspicious areas in order that the condition may be detected in this early stage. Therapy is by radiation since this is one of the most radiosensitive of all tumors of the upper respiratory tract. The nasopharyngeal area tolerates heavy doses of radiation better than adjacent areas. Even in widely disseminated metastasis, palliative radiation is indicated because of the radiosensitivity of the condition. The pain of metastasis frequently can be relieved completely by this means.—*Author's abstract.*

A Case of Nasopharyngeal Chordoma. *A. S. Handousa Bey, Cairo, Egypt.* J. Laryng. & Otol. 63:31-33, January 1949.

Chordomas are rare and perhaps are derived from the notochord. A case of nasopharyngeal chordoma in a 16 year old girl is presented. She complained of complete nasal obstruction for two and one-half years and she had had vague headaches. Examination showed that the nasal mucosa was congested and narrowing the air passages but anterior rhinoscopy revealed no visible polypi or tumors. The left antrum was opaque on transillumination. Posterior rhinoscopy showed a large mass attached by a wide base to the roof of the nasopharynx and obstructing the postnasal space. The mass was smooth, round, hard and covered by healthy-looking mucosa. Other findings were normal. Roentgenograms proved the absence of intracranial extension of the tumor. The findings indicated that the cause of the nasal obstruction was a growth arising from the spheno-occipital region. The growth was either benign or of low malignancy; the diagnosis was

established by biopsy. The tumor was surgically exposed from the front by the left lateral rhinotomy route. After incising the covering mucosa in about the center of the mass, the anterior part of the tumor became visible and it felt hard throughout. By the buccal route a periosteum elevator was forced in between the posterior end of the tumor and the base of the skull under the stripped mucosa and the tumor was mobilized and removed. All rough areas were scraped out and smoothed down by a curet. The raw surface left after removing the tumor was packed with flavin vaseline gauze and the lateral rhinotomy wound was closed. Recovery was uneventful. 1 reference. 8 figures.

Two Cases of Cavernous Angioma of the Oral Cavity and Pharynx (*Su due casi di angiomi cavernosi della cavita orale e faringea*). *Carlo Sambataro, University of Milan, Milan, Italy.* Arch. ital. di otol. 408-17, Fasc. 6, 1948.

In a 22 year old man the growth extended throughout the entire right tonsillar cavity. Involvement of the base of the tongue and entire right glosso-epiglottic vallecula was extensive. The mass seemed not to have invaded the pyriform recess but appeared to have encircled the right lateral border of the epiglottis and occupied the right false vocal cord. With four applications of the monopolar electrode (first to obtain a biopsy specimen of the upper pole of the tumor with diathermy coagulation of the base of the resultant wound) the entire mass was removed leaving a flexible scar and subsequent return of the voice to normal. In the second case the lesions were limited to an irregularly lobate, violet colored elevation on the right side of the under surface of the tongue and some insignificant venous distention was present. Results of coagulation therapy were good. The author therefore favors this type of coagulation treatment for these lesions. It produces an immediate diminution in the size of the mass, thus limiting the extent of the field of treatment as the operation proceeds and resulting in a soft, nonretracting scar. As coagulation takes place a narrow halo of whitish color forms around the area of application of the electrode which tells the operator at all times exactly how far the process of coagulation has proceeded. Before and during the period of healing the patient was treated intensively with coagulen and with vitamins C and K; there was no hemorrhage. 34 references. 4 figures.

Radon Therapy of Nasopharyngeal Lymphoid Hypertrophy in Children. *E. G. Collins, I. S. Thomson and G. E. Swindell, Aberdeen, Scotland.* J. Laryng. & Otol. 63:17-23, January 1949.

A preliminary report on 41 children treated by radon applications to lymphoid hypertrophies of the nasopharynx is presented. It has been found that two types of disease benefit by this treatment: (1) catarrhal deafness; (2) chronic rhinitis (often associated with mucosal hypertrophy of the antrums). The causes of persistent catarrhal rhinitis with antral mucosal hypertrophy have been investigated and it is concluded that when sinus infection and allergy have been excluded, the mucosal hypertrophy

is a secondary reaction to infected lymphoid remnants in the nasopharynx. The applicators used have a platinum wall of 0.5 mm. thickness, contain 20 mc. of radon each and are left in position for one hour. Isodose curves have been calculated, showing that the surface irradiation at the eustachian orifice is 300 r and at a depth of 1 cm. is 70 r. Compared with Fowler's technic and dosage, this method gives a reduced surface dose but greater penetration. The dangers of irradiation are discussed; in assessing results most importance is placed on symptomatic improvement and not on the regression or abolition of lymphoid tissue in the nasopharynx. There was no evidence of radiation burns, scarring or atrophic rhinitis seen in this series. Of 29 cases of catarrh treated by irradiation, 16 were cured and 9 improved. Sinus roentgenograms after treatment showed the antral opacity to have regressed in 20 cases. Of 12 cases of deafness, 7 were cured and 3 were improved. Eight of these deafness cases had antral mucosal hypertrophy. It is concluded that larger and more frequent doses may be required in cases of deafness. 5 references. 1 table. 4 figures.—*Author's abstract.*

Irradiation of Lymphoid Tissue in Diseases of the Upper Respiratory Tract. *Donald F. Proctor, Leroy M. Polvogt and Samuel J. Crowe, Johns Hopkins Hospital, Baltimore, Md.* Bull. Johns Hopkins Hosp. 83:383-428, November 1948.

In any nasal medication the first question should be its possible toxic effects on the cilia and mucous membranes of the nose. Certain drugs are harmless when given in normal saline; these include neosynephrine, ¼ per cent, ephedrine, 1 per cent and penicillin, 1,000 units per cc. If there is normal ciliary function, normal mucus production and no mechanical interference with the airway, the whole system is safe with one exception. If the nasopharynx is the site of a fulminating infection, the ears, nasal mucosa and paranasal sinuses may be involved. The nasopharynx is the real vulnerable region in the upper respiratory tract, because all airborne organisms enter the system through the nasopharynx and over the adenoids. Crypts in nasopharyngeal lymphoid tissue offer the most favorable site for the common cold virus and pathogenic bacteria which produce upper respiratory infections. Local conditions can be made unfavorable to recurrent upper respiratory infections by treatments that reduce the size of the lymphoid nodules and the depth of the crypts. Removal of adenoids in children may be followed by recurrence of lymphoid tissue in the nasopharynx and production of undesirable symptoms. After adenoid removal, hyperplastic lymph nodules can be seen a few months later in the lateral walls of the nasopharynx. Such recurring lymphoid tissue should be looked for and treated in patients with recurring upper respiratory disease, recurring attacks of otitis media, chronic otitis media, recurring attacks of sinusitis or defective hearing from chronic interference with the eustachian tube function. Adenoid tissue is highly radiosensitive and small doses can reduce the lymphoid nodules and decrease their tendency towards hyperplasia. In most patients the following results are expect-

ed when they are treated as suggested: (1) when the symptoms arise from interference with eustachian tube function, hearing improves or progressive hearing impairment ceases; (2) there is a marked drop in the number and severity of upper respiratory infections; (3) there is an improvement, especially in children, in bronchial asthma, when the disease has an infectious basis and when other therapy such as desensitization is also used. 14 references. 22 figures.

3. Tonsils

Branchiogenic Cyst of the Soft Palate (*Cisti branchiogena del velo pendulo*). *S. Magno, University of Palermo, Palermo, Italy.* Oto-rino-laring. ital. 16:385-89, Fasc. 6, 1948.

A 22 year old man had a cyst-like mass in the back of his mouth. Aside from some change in the voice, difficulty in swallowing and a dry mouth from sleeping with his mouth open, the patient had never been conscious of the cyst. The mass was about the size of a cherry and attached by a broad pedicle extending from the base of the uvula on the left side along the posterior border of the soft palate into the palatal attachment of the left palato-pharyngeal fold. The growth was composed of one large cyst involving the entire lateral third of the palatal border and a number of smaller cysts extending over to the base of the uvula. Microscopic examination of sections stained with hematoxylin-eosin, Weigert's stain and Van Gieson's stain, disclosed that all of the cyst-like cavities were uniform in histologic characteristics. Each was lined with a single layer of cylindrical epithelium; these cells had a foamy appearance (secretory function) and round nuclei situated in the base of the cell. Surrounding these cysts were layers of richly nuclear connective tissue containing numerous elastic fibers and dilated capillaries and precapillary structures. Throughout this tissue were evidence of blood extravasation and patches of lymphocytic infiltration, most numerous about the blood vessels. The covering of palatal mucosa presented an entirely normal appearance. The contents of the cyst consisted of a milky fluid in which floated numerous degenerated cellular structures. The author believes that the characteristics of the neoplasm and its location and extension sufficiently prove it originated from a persistent remnant of the first branchial cleft. 10 references.

Hemorrhages Following Tonsillectomy and Adenoidectomy. Related to Weather During a Twelve Year Period. *Allison G. James, Beverly Hills, Calif.* Ann. West. Med. & Surg. 2:558-61, December 1948.

A total of 12,826 tonsillectomies and adenoidectomies were done in a twelve year period, May 1, 1934 through April 30, 1946, on children ranging in age from 2 to 12 years. The relationship if any between postoperative hemorrhages and weather changes were studied. There were 177 cases of postoperative hemorrhages, 78 in males and 99 in females. By

discarding persons with immediate postoperative bleeding and some uncertain cases, those with true postoperative hemorrhage were reduced to 136 (1.06 per cent). The weather factors studied included wind direction, temperature, temperature range, barometric pressure, relative humidity and precipitation. Hemorrhages were found to occur in association with environmental temperature peaks. The change in temperature rather than the degree of temperature was the significant factor. The percentage of postoperative hemorrhages was greater in the colder months when temperature changes were more acute (in Los Angeles region). Other weather factors appeared to be of secondary importance. These observations may differ in other parts of the country; barometric pressure is probably important in cyclonic areas such as in the midwest. Individuals have different capacities for adaptation to environmental change. In the hemorrhage cases the repeated impacts of temperature change exceeded the load to which the individual patient could adapt. 3 references. 5 figures.

BRONCHOLOGY

Management of Bronchiectasis. *James L. Wilson and Clarence C. Pearson, Mason Clinic, Seattle, Wash.* Bull. Mason Clin. 2:61-69, September 1948.

The salient features of the subject of bronchiectasis have been reviewed. A definite regimen of management which has proved beneficial and physiologically sound has been set forth. With any patient in whom a diagnosis of bronchiectasis has definitely been confirmed by bronchographic examination a decision should be made as to whether or not the case fulfills the requirements for surgery. Patients meeting the necessary requirements should undergo surgery as soon as possible after preoperative preparation. General measures for systemic improvement, postural drainage exercises and antibiotic therapy are the most effective nonsurgical measures at hand for combating the infection and promoting the bronchial drainage from the involved areas. Postural drainage with the head and trunk in a vertically dependent manner is employed three times daily for periods of one-half hour each, with the patient practicing coughing and breathing exercises while in the dependent position. The administration of medications such as iodides, ammonium chloride or continuous steam inhalations are often utilized for thinning the viscid bronchial secretions to gravitational drainage. Bronchial dilators of the nature of ephedrine, neosynephrine or aminophylline are given to aid in overcoming the mechanical difficulty of expectorating the tenacious secretions. Aerosol regimen should be initiated by nebulization of a solution of penicillin sodium or calcium, repeated several times daily through a properly constructed vaporizer. If a concentration of 20,000 units per cubic centimeter is used, this should be employed ten times daily at hourly intervals. However, if 50,000 units of penicillin are dissolved in 2 cc. of saline, it should be used every two hours, five times a day. It usually requires from ten to twenty-five minutes for ade-

quate transformation of the solution into an aerosol mist and its inhalation. If after forty-eight hours of intensive treatment there is no apparent improvement of clinical symptoms, then a reexamination for stain and culture of the sputum is indicated. If these studies show a preponderance of penicillin-resistant or gram-negative organisms, streptomycin should be added to the mixture for nebulization. The addition of 1 Gm. of streptomycin daily to the solution for vaporization provides an effective offense against penicillin-resistant bacteria. More effective therapeutic results are obtained with intramuscular injections of 50,000 units of penicillin given every three hours, simultaneously with the aerosol regimen. Antibiotic aerosol therapy properly administered gives effective topical application of the drug with at least temporary reduction in the volume of bronchial secretions, elimination of the offensive odor and decrease in viscosity of the tenacious mucus. 18 references. 4 figures.—*Author's abstract.*

The Segmental Distribution of Bronchiectasis. *H. E. Counihan.* Irish J.M.Sc. 275:731-37, November 1948.

The lung is composed of a number of bronchopulmonary segments but little study has been given the segmental distribution of bronchiectasis. A series of 149 cases of bronchiectasis were studied to determine distribution of the disease. Considering the lingular process of the left upper lobe as the equivalent of a left middle lobe, it was found that the distribution of 69 cases in which the disease was confined to the left lung was 33 in the lower and middle lobes; 25 in the lower lobe; 7 in the lower, middle and upper lobes; 3 in the middle, and 1 in the upper lobe. The lower lobe is composed of a basal and an apical portion, called the dorsal lobe. This often is healthy when the remainder of the lower lobe is diseased. Studies of this series showed that the dorsal lobe should not be removed in 56 per cent of cases. On the right side, the middle lobe was involved with the lower in 8 of 13 unilateral and 19 of 35 bilateral cases, the disease attacking the upper lobe more frequently and not being confined to one part of the middle lobe as often as on the left side. Resection of the pectoral segment is sometimes necessary if it is diseased (2 left and 3 right-sided cases in this series). It was the only part of the lung diseased in the last 3 cases. There were about as many patterns as cases in the 51 bilateral cases in this series. This study showed that lobectomy was the most efficient operation in a relatively small number of cases. Follow-up surveys of cases of bronchiectasis show that death results from septic complications rather than local spread of the disease. Inasmuch as surgical control of these complications is improving, the question of spread of the disease and postponement of surgery is important. Spread of the disease remains undetermined. Studies of Roles and Todd by repeat bronchograms at three to six year intervals after the original diagnosis showed that only 8 of 20 medical cases remained unchanged whereas similar studies of 114 patients in this series with time intervals of one to nineteen years between first and last exposures only showed evidence of

spread in 6 cases. Further investigations of this question are indicated. 9 references. 8 tables. 4 figures.

Bronchiectasis. *Alvin L. Barach, New York, N. Y.* Am. Pract. 3:89-94, October 1948.

The most significant advance in the treatment of bronchiectasis from a medical point of view has been the development of penicillin, especially its use by inhalation. Although favorable results have been observed following its administration intramuscularly, the improvement resulting from penicillin aerosol has been in many cases of far more marked extent. The abundant growth of bacteria on a bronchial surface lined with purulent exudate, that may not be reached by lymphatic or capillary blood supply, is combated more successfully by topical application with a mist of penicillin, which not only achieves a therapeutic blood level but also a high sputum level that is not obtained by systemic administration of the drug. Aerosol administration is feasible for patients who may be required to take this treatment over a period of weeks, months or years. The dosage administered to accomplish elimination of gram positive bacteria from the expectoration is in most instances 400,000 to 600,000 units daily, administered in a concentration of 50,000 units to 100,000 units per cc. of normal saline or, preferably in most instances, in 1 per cent neosynephrine, in divided doses either two or four times daily. Following inhalation of penicillin aerosol the sputum cultures generally reveal gram negative organisms such as Bacillus coli, B. aerogenes, B. pyocyaneus and B. proteus but in the experience of the author these organisms have not been showed to exert a pathogenic effect. The presence of Friedlander's bacilli or B. coli prior to tratment requires the additional administration of streptomycin by aerosol for a limited period (two weeks) in a dosage of 1 Gm. per day. The simplest method of administration involves the employment of a fine particle-size nebulizer. Nebulization of the solution is produced either by oxygen of a high-pressure cylinder, a motor pump, an automobile foot pump or, in a few patients who are able to nebulize concentrated solutions without fatigue, by a hand bulb. The clinical results include, in favorable cases, marked diminution or disappearance of cough and expectoration and improvement in well-being, with gain in weight and energy. Although recurrence of infection takes place frequently in chronic advanced cases, a maintenance dose of 200,000 to 300,000 units of penicillin in most cases results in sustained improvement. The development of resistance is rare among adults who have taken penicillin over a period of years. The only organism in which increased resistance has been found has been the Staphylococcus aureus and this type of resistance can be overcome by increasing the dosage of penicillin to between 600,000 and 1,000,000 units of penicillin by aerosol for a period of one week to ten days. Inhalation of micronized or finely ground crystalline penicillin as a dry powder is less effective and more wasteful than properly employed aerosol therapy. 23 references.—*Author's abstract.*

Prospects for Prevention of Chronic Bronchitis and Bronchiectasis. Rational Management of Bronchopulmonary Infections by Penicillin Aerosol Therapy. *Walter Finke, Genesee Hospital, Rochester, N. Y.* J. Pediat. 33:29-42, July 1948.

Chronic bronchitis and bronchiectasis may be prevented by detection and eradication in their earlier stages before permanent pathologic changes have set in. In considering prophylaxis, it is not too well realized that severe respiratory infections of early childhood, such as laryngotracheobronchitis and bronchiolitis are among the illnesses that pave the way for later recurrent or chronic pulmonary infections. Among 39 children over 2 years of age with bronchopneumonia, 26 had since infancy a definite history of recurrent respiratory infections other than simple colds. In at least 70 per cent of cases followed, chronic bronchopulmonary infection in children less than 2 years old could be traced to the same type of respiratory disease in their family. Short treatment for pyogenic bronchopneumonia with chemotherapy only masks these lesions; unlike pneumococcic pneumonia, these lesions often fail to resolve completely. Fifty children with bronchopneumonia were treated with sulfonamides and/or penicillin. Sixteen still had signs of chronic bronchopulmonary infection two years later, while 24 others have since displayed recurrent respiratory infections. Because of potential chronicity, bronchopneumonias should be treated longer and more vigorously. Conditions labelled virus or atypical pneumonia may be pyogenic infections and should be treated as nonpneumococcic bacterial pneumonia. Since brochopulmonary infection lacks marked early features, attention should be given to its early signs, such as repeated chest colds, croup, etc. Negative chest roentgenograms of a child with perisistent cough after pneumonia, pertussis, etc. are not to be taken as proof that no serious condition exists. Tonsillectomies on children with recurrent lower respiratory infection do not prevent further affections of this type. Exclusive allergic management also should not be expected to cure infectious asthma. Rational treatment implies eradication of a residual bronchial infection whenever it becomes evident. Penicillin aerosol treatment is the best prolonged therapy for severe acute respiratory infections. This treatment for subacute and early chronic bronchopulmonary infections was found effective in 15 cases observed for at least one year. No single therapy will prevent chronic bronchitis and bronchiectasis. Children with potential bronchiectasis should be followed after successful treatment like those with rheumatic fever or tuberculosis. 28 references. 3 tables.

Vegetal Bronchitis. A Summation of Thoughts on Its Etiology. Presentation of Twenty-Three Cases. *Elmer O'Brien, Rochester, N. Y.* Laryngoscope 58:1013-1036, September 1948.

The available literature since 1869 was studied and many of the theories presented. Tremendous progress was made after the advent of bronchoscopy. The historical record of foreign body experiences is presented to show that vegetal bronchitis has been suspected for a long time but

only recently appreciated. At one time peanuts were thought to be the sole cause of this condition but later all vegetable substances had to be considered. The history gradually unfolded the present day knowledge of vegetal bronchitis with particular emphasis on the etiology of its intense characteristic bronchial reaction. All authorities now agree that this reaction occurs but they fail to agree upon the cause. The peculiar reaction is described at length, the treatment discussed and all the factors that might throw light on the cause are summarized. The author concludes from this study and his own experience that the intense fulminating reaction of vegetal bronchitis is the result of mechanical and allergic factors—especially the latter. 44 references.—*Author's abstract.*

Acute Obstructive Laryngotracheobronchitis. Management from the Standpoint of the General Practitioner and Pediatrician. *A. Harry Neffson, Tucson, Ariz.* Arizona Med. 6:32-38, February 1949.

Presence of a mechanical block in the airway must be established before a diagnosis of acute laryngotracheal obstruction is made. It is indicated by stridor, inspiratory retractions of the mobile parts of the chest wall, ballooning of the neck, abdominal contraction during expiration and suppression of breath sounds. Retraction is more marked in young persons than in adults because of their more mobile chest wall and may occur in pneumonia, asthma or cardiac failure. It is then expiratory instead of inspiratory. Membrane formation is usually the chief factor in diphtheria and edema in nonspecific infections. Diphtheria is characterized by a more gradual onset, mild chest retractions, hoarseness or complete aphonia and progressive dyspnea without remissions. Date of the Schick test and history of possible exposure are important. Both nose and throat should be carefully examined for membrane formation. Direct cultures should be made and examined in two laboratories. This reduces the error to about 11 per cent. Acute nonspecific obstructive laryngitis usually has a much more sudden onset with no previous sore throat and dyspnea out of all proportion to the slight hoarseness and marked chest retractions. The symptoms increase in severity, indicating progressive obstruction. Restlessness develops followed by ashen pallor interspersed with cyanotic attacks. The child becomes exhausted with rapid and shallow respirations, rapid and feeble pulse, temperature 105 to 108 F., stupor, coma, convulsions and death. These symptoms usually develop slowly enough to permit a short wait for improvement before operation is attempted. In 10 to 20 per cent of cases however, the symptoms result from edema of the epiglottis, aryepiglottic folds and arytenoids and are most deceptive. The patient may be comfortable with good color and mild chest retraction when there is actually tremendous edema and imminent asphyxia. A coughing spell or change of position may cause the edematous supraglottic structures to be suddenly pulled into the larynx with resulting asphyxiation and death in a few moments. This stage is characterized by disappearance of the inspiratory stertor and continuation of the louder, lower-pitched, coarse expiratory rattle resembling a snore. If this occurs, a confirmatory laryngo-

scopy should be done promptly, a bronchoscope passed and a tracheotomy immediately performed. General treatment consists of rest, which is most important, and sedation. Needless examinations and manipulations must be avoided and the sleeping child not disturbed for anything, especially medication. Neither opiates nor atropine should be used but sedation obtained by whisky diluted with sugar and water or small doses of bromides or phenobarbital. Syrup of ipecac, 10 minims to a dram every three hours, depending upon age, should be given but stopped if vomiting occurs. Continuous sponges, wet packs, ice caps or cold colonic irrigations are given for hyperpyrexia. Fluids are important but should be given with a Breck feeder or catheter tipped medicine dropper and not by a bottle which only increases the respiratory strain. Parenteral fluids are given if refused orally, taking care not to overburden the heart. Steam inhalations are routine and usually quite effective. Steam is sometimes harmful and the patient does better in an oxygen tent or with just cool air. Specific treatment is essentially chemotherapy and antibiotics through serotherapy may also be used. Operative treatment may be aspiration, intubation or tracheotomy. The first is simple and effective for handling mucopurulent secretions. Intubation is done for subglottic edema. It is essential that somebody be continuously present until the tube is removed in order to immediately replace it if it becomes blocked or is coughed up. Tracheotomy is simple but good postoperative care is necessary to avoid dangerous complications. The temperature must be taken every hour for the first four to six hours postoperatively and active antipyretic measures promptly started if indicated. Extreme restlessness and convulsions may require treatment. Oxygen is dangerous after tracheotomy because of its drying effect upon the tracheobronchial secretions. These may become crusted and act as foreign bodies with serious results. Acidosis and alkalosis develop easily and must be watched carefully. Tension pneumothorax is a serious complication often overlooked. It occurred in 13.5 per cent of 126 tracheotomies for nonspecific obstructive laryngotracheobronchitis. About 60 per cent of these cases occur within a few hours postoperatively and have a mortality of about 20 per cent for unilateral and 90 per cent for bilateral cases. 6 references.

Pulmonary Hazard of the Ingestion of Mineral Oil in the Apparently Healthy Adult. A Clinicoroentgenologic Study, with a Report of Five Cases. *Louis Schneider, Mt. Vernon, N. Y.* New England J. Med. 240: 284-91, Feb. 24, 1949.

It has been known for some time that the repeated use of mineral oil in nose and throat medicaments may produce a chronic pneumonitis, the so-called lipid pneumonia. Likewise, such condition may result from ingestion of liquid petrolatum used for laxative purposes repeatedly by debilitated persons with defects in the integrity of the nervous system controlling the mouth and throat. It is not appreciated that years of mineral oil habit by the apparently healthy adult may also produce the lipid pneumonia picture. The author describes 5 such cases occurring in older

individuals and has appended briefly the histories of 2 more. They are characterized, especially in the early stages by such paucity of symptoms and physical signs, that they may go undetected until they are picked up by one of the numerous case-finding tuberculosis surveys now being conducted in an ever increasing scale. The roentgen appearance of the lesion may vary from a small ill-defined ground-glass density to a circumscribed uniformly dense process that the pathologists have called paraffinoma. Following the laws of gravity, this man-made disease in the ambulatory patient is naturally situated in the lower lobe regions, first on one side (usually the right), finally becoming bilateral after years of repeated aspiration of the mineral oil. The chief error in diagnosis particularly when the pulmonary involvement is unilateral is to mistake this benign granulomatous condition for bronchopulmonary cancer. In this era of pulmonary resection, many a lung has been removed for cancer only to find it the seat of lipid pneumonia which was not thought of preoperatively. More of these cases will be diagnosed and saved from unnecessary surgery if the existence of this disease is borne in mind by those interested in the clinicoroentgen aspects of chronic pulmonary pathology. Among simple tests used in the diagnosis of suspected oil aspiration pneumonitis, are the examination of sputum for mineral oil droplets and the careful performance of lung aspiration. In order to ascertain the real pulmonary hazard to the apparently healthy older adult who has been taking mineral oil for the relief of constipation for many years a roentgenologic survey of such individuals on a large scale is under way. 18 references. 8 figures.—*Author's abstract.*

Pins in the Periphery of the Lung. *Gilroy Glass, Nottingham.* J. Laryng. & Otol. 62:715-20, December 1948.

Pins in the periphery of the lung are rare. A short delay in their attempted removal may not involve danger. It is justifiable to repeat attempts to remove a foreign body under fluoroscopy but after a few attempts the pin will be known to be impacted and further trials would be futile. If attempts at bronchoscopic removal have failed, thoracotomy and partial lobectomy may be resorted to. Foreign bodies in the lung periphery are localized only through fluoroscopy. A single plane fluoroscope is altogether unsuitable for bronchoscopic aid because it is misleading but, unfortunately, double plane fluoroscopes are rare. With extreme care pins can be removed successfully without either a double plane fluoroscope or pin bending forceps. There is a problem of visual grasping of the foreign body and one of disimpaction and removal without piercing or sticking in the wall of the bronchus. The bronchoscopist must be prepared to defer to the opinion of the radiologist throughout. When the foreign body is beyond reach of the bronchoscope, the fluoroscopic screen is the only possible method of visualization. There is a tendency to aim forceps tips at the foreign body and thus displace the angle of the bronchioles. Having decided from roentgenograms which branch is likely to be affected, the endoscopist should pass the forceps without watching the screen

and be guided entirely by the radiologist. The endoscopist should watch the screen only when the forceps are correctly located. When the shadow of the forceps and that of the foreign body are superimposed it is not certain that they lie in the same bronchiole. Having located the pin, it is assumed that the normal lung movements will have brought the point of the pin into close contact with the wall of the bronchus, if it is not already pierced. It must thus be disimpacted before removal. Once disimpacted the foreign body should be bent to bring the point downward. If the costophrenic bronchoscope or pin bending forceps of Jackson are not available or if the pin cannot be bent the problem of removal point uppermost must be solved. Only delicacy of touch and behavior of the shadow on the screen can guide. A method employed by the writer was to use the largest size forceps which would enter the bronchiole and to grasp the pin close to the point and slightly at an angle, so that the sharp end of the pin pointed slightly toward the shaft of the forceps. This was successful in 2 cases in which it was tried. The gentlest touch is necessary in withdrawal or the point will become reimpacted. To determine where the lung tissue was being pulled forward, the pin was withdrawn 1 cm. and the forceps opened slightly; if the point of the pin was dragging the lung, the shadow immediately shot back to its former position. When correctly positioned the forceps could be opened and closed without movement of the shadow of the foreign body, which could then be brought within the bronchoscope. All forceps must be tested accurately beforehand. There is no place for speed but if after twenty minutes the foreign body is not removed, the attempt should be temporarily abandoned. 6 references. 2 figures.

Physical and Roentgenologic Findings in the Early Diagnosis of Nonopaque Foreign Bodies of the Bronchial Tract. *Arthur Q. Penta, Ellis Hospital, Schenectady, N. Y.* New York State J. Med. 49:64-68, Jan. 1, 1949.

Fluroscopy is one of the most important methods in diagnosing nonopaque foreign bodies. In suspected cases both lateral and anteroposterior roentgenograms should be made. The history should always include information about recent attacks of coughing and choking while eating or drinking. Foreign bodies in the bronchi produce an obstructive emphysema, leading ultimately to an obstructive atelectasis. The last stage is complete bronchial obstruction with pulmonary destruction. Certain foreign bodies may produce a rapid, complete bronchial obstruction, resulting in massive atelectasis within a few hours after their entrance. In the early stages the symptoms are chiefly those of laryngeal stridor, bronchial wheezing, cough, dyspnea, rapid pulse and slight elevation of temperature. If the body is lodged in the laryngeal ventricle or trachea there also are present a marked retraction of the suprasternal fossa and indrawing of the abdomen in the xiphoid region. Tracheal foreign bodies rapidly produce bilateral obstructive emphysema and the picture may resemble bronchial asthma. Inspection may reveal a limited pulmonary expansion

of the involved side. The percussion note is slightly hyperresonant and diaphragmatic movement is limited. There are decreased or distant breath sounds with asthma-like wheezing on the affected side. Roentgenograms show a greater transparency on the obstructed side. The dome of the diaphragm becomes flattened. There is slight displacement of the heart shadow toward the uninvolved side and this plus limited diaphragmatic motion on the obstructed side are diagnostic of obstructive emphysema. Once atelectasis develops, the percussion note is dull and borders on flatness. The breath sounds are distant or absent. There is a marked density of the involved area in roentgenograms. The diaphragm is elevated and mediastinal structures are displaced toward the affected side. During the stage of obstructive emphysema, most patients recover following early removal of the foreign body. If untreated there may be pulmonary suppuration with abscess formation, perforation of the lung and pyopneumothorax. Bronchiectasis occurs in some cases. Thoracic surgery may have to be resorted to immediately when complications occur. Chemotherapy should always be given after bronchoscopic removal of bronchial foreign bodies. Follow-up roentgenograms should always be made to exclude the presence of a second foreign body. The patient should not be discharged unless the involved lung shows complete aeration and has regained normal function. 1 reference. 8 figures.

Diagnostic Bronchoscopy. *C. B. Schoemperlen, Winnipeg, Man., Canada.* Canad. M.A.J. 60:11-14, January 1949.

Bronchoscopy, as an adjunct to other present day procedures will greatly increase accuracy in diagnosis and localization of pulmonary lesions. A combined local, pentothal and curare anesthetic is preferred and has been used in over 600 cases. Five cases are presented illustrating that the correct diagnosis was not suggested nor proved until bronchoscopy was performed. Some of the more common indications for the procedure are: (1) atelectasis, acute or chronic, which may be caused by tumor, benign or malignant, endobronchial tuberculosis, cicatricial stenosis or foreign body, etc.; (2) nonopaque foreign bodies may be particularly troublesome, they may be suggested by wheezing or roentgen appearance of localized emphysema but only proved by bronchoscopy; (3) chronic complaint of wheezing may in itself justify the procedure; (4) hemoptysis is another indication and a fatality from hemorrhage was prevented by removal of a polypoid tumor and packing of the bleeding area with oxycel; (5) in the majority of 200 cases, with chronic cough, excluding those with localized lesions, nothing was seen endobronchially to substantiate the common diagnosis of chronic bronchitis. The importance of localization, preoperatively, of tumors and bronchiectasis is stressed. Probably the most valuable recent aid in diagnosis is the collection, through the bronchoscope of saline washings from a lobe or segment where no endobronchial lesion is seen. This is illustrated by 1 case which showed numerous clusters of Actinomycoses bovis in the washings and another, suspected of having apical tuberculosis showed numerous carcinoma cells. Three other cases are presented, 1 showing endo-

bronchial tuberculosis as the cause of a middle lobe atelectasis, previously diagnosed bronchiectasis; another had a bronchial adenoma causing collapse of the right lower lobe and previously diagnosed as pericarditis; still a third was diagnosed clinically as bronchogenic carcinoma with pleural effusion but on bronchoscopy a nonopaque piece of charcoal was occluding the bronchus. 7 figures.—*Author's abstract.*

Transtracheal Anesthesia for Bronchoscopy. *Dwight E. Harken, Boston, Mass. and Arnold M. Salzberg, Paterson, N. J.* New England J. Med. 239:383-85, Sept. 9, 1948.

A method of administering pontocaine via the cricothyroid membrane directly into the trachea through a needle is described. The safety of the method is supported by experience in over 1,000 patients. Its advantages are: (1) large amount of dilute agent that gives good surface coverage; (2) administration in two injections, thus producing anesthesia of the main bronchi as well as the trachea; (3) the patient is in the dorsal decubitus position during injection. The patient is given 0.09 Gm. oral pentobarbital sodium one and one-half hours before bronchoscopy and 0.06 Gm. oral codeine sulfate one hour before. Ten to fifteen minutes prior to anesthesia, the lips, mouth and pharynx are sprayed with 2 per cent pontocaine hydrochloride. Three minims of 2 per cent solution are given in three sprays to the zones indicated. With the patient supine and head hyperextended, the anterior aspect of the neck is cleaned with alcohol, and the skin and subcutaneous tissues are injected 2 cc. of 2 per cent procaine. Three cubic centimeters of pontocaine (30 mg.) diluted with 6 cc. of isotonic saline solution are aspirated into a 10 cc. syringe through an 18 gage needle. The needle is directed through the cricothyroid membrane into the trachea and one-half the solution is injected. An alcohol sponge is pressed over the injection site. The patient sits up and coughing is encouraged to remove secretions. The patient is returned to dorsal decubitus position and rests for five minutes. In a second injection similar to the first, the rest of the pontocaine is instilled into the trachea. The patient again sits up and coughs; he is again returned to dorsal decubitus position. After bronchoscopy, the patient is allowed nothing orally for three hours. There is little danger of overdosage but there is one of sensitivity. Pentobarbital is used preoperatively for prophylaxis against pontocaine reactions. A 0.5 Gm. solution of sodium phenobarbital should be available for intravenous use. The dorsal decubitus position renders impossible an accident inherent in the intratracheal instillation of drugs in the upright or sitting positions. In over 1,000 cases there were complications in only 3 patients, who had superficial cellulitis of the soft tissues about the region of injection. A possible complication might conceivably arise from injection under the tracheal mucosa. This could obstruct the airway and can be avoided by verifying the position of the point of the needle. The method should not be used in the presence of extensive tuberculous disease of the larynx and upper trachea. The applications of the technic for foreign body re-

moval are contingent upon the position of the foreign body. 2 references. 2 figures.

Anaesthesia for Bronchoscopy and Oesophagoscopy. *William A. Butt and Harold W. Boyes, Toronto Western Hospital, Toronto, Ont., Canada.* Canad. M.A.J. 60:62-64, January 1949.

When laryngologists are confronted with extremely nervous and uncooperative patients, a satisfactory bronchoscopic examination cannot be done under local anesthesia alone. In adults, the use of inhalation anesthesia has not proved satisfactory since the degree of anesthesia must be deep in order to provide sufficient relaxation and to overcome reflexes which may cause dangerous spasm when the bronchoscope is introduced. The advent of curare and sodium pentothal has greatly aided the anesthetist in providing general anesthesia for this work. Curare has a selective action, the muscles of the head and neck being relaxed before those of the rest of the body. If the patient is willing to cooperate but has difficulty relaxing his jaw and neck muscles the use of curare with cocainization of the throat, would be sufficient. For those who demand to be asleep, the added use of sodium pentothal is necessary. The secret for the successful use of curare-pentothal for laryngoscopy, depends on the thorough spraying of the patient's pharynx and larynx, cocaine in 5 or 10 per cent strengths or 2 per cent pontocaine being most generally used. A pledget of cotton soaked in the solution is held in both pyriform fossas, followed by a thorough application to the back of the epiglottis and arytenoid cartilages. The vocal cords are sprayed and 1 cc. of the solution instilled directly into the trachea. It is essential that the patient be allowed to wait at least ten minutes after the throat has been sprayed to allow the local anesthetic sufficient time to take effect. These patients should have premedication consisting of nembutal, atropine and morphine. A review of 100 consecutive cases of bronchoscopic and esophagoscopic examinations showed that one-fourth of the fifty-two bronchoscopic examinations and one-third of the forty-eight esophagoscopic examinations required general anesthesia. The local-curare-pentothal technic was used in 75 per cent of these cases, 5 per cent sodium pentothal alone, 5 per cent received local and sodium pentothal and 15 per cent received inhalation anesthesia. The form of curare used was D-turbocurarine chloride which has 10 mg. of the crystalline drug per cubic centimeter. This drug was injected intravenously, the dose being estimated according to age and muscular development of the patient. A period of from one to two minutes is allowed to elapse for it to have some effect, then a 5 per cent solution of sodium pentothal is injected slowly into another vein until the patient's lid reflexes have disappeared. It is important to allow a period of at least five minutes to elapse from the time the curare is injected before the bronchoscope is inserted. If the patient begins to strain when the bronchoscope is introduced, an additional dose of sodium pentothal is given. If relaxation is not adequate, extra curare is necessary. If an overdose of either drug has been given and cyanosis has developed, the examination must be interrupted and an intra-

tracheal tube inserted through which oxygen is given under pressure, until spontaneous breathing has been restored. The local-curare-pentothal combination also has proved of great value for esophagoscopic examinations. The breathing is quiet and regular and the color remains good. Less curare and pentothal are required than for bronchoscopy. In this series of cases, no coughing or obstruction to the airway occurred and the patients were returned to the ward conscious and in good condition. We have found that the technic of using local-curare-pentothal has simplified greatly the performance of bronchoscopic and esophagoscopic examinations, as good relaxation is provided and the patient is asleep, recovery is rapid and there are no unpleasant after-effects but it is essential that the anesthesia not be rushed and that adequate time be allowed after each of the drugs is administered, to have maximum effect before the examination is commenced. Close vigilance must be kept to prevent anoxia and a gas machine equipped for intratracheal intubation must be at hand for immediate use. —*Author's abstract.*

Bronchoscopy in the Newborn. An Analysis of Fifty Cases. *Clyde A. Heatly and Ernest B. Emerson, Jr., University of Rochester School of Medicine and Dentistry, Rochester, N. Y.* Ann. Otol., Rhin. & Laryng. 57:802-807, September 1948.

Little attention has been paid to the possibility of applying bronchoscopy to the solution of some of the problems involving respiratory disturbances in the newborn. The immediate responsibility for resuscitation of the newborn is not within the province of the bronchoscopist but the authors feel that in cases in which well recognized methods have failed, valuable aid may be rendered by a carefully done bronchoscopy. As a background to this study the physiology of neonatal respiration is reviewed. It is pointed out that at birth the lungs are collapsed and that several days may elapse before complete aeration has been established. It is emphasized that atelectasis in the immediate neonatal period should be considered to be of clinical importance only when it is extensive and persistent enough to cause symptoms. Varying amounts of amniotic fluid are regularly present in the upper and lower air passages of the newborn and in certain instances may not be expelled spontaneously. In infants who died because of pneumonia shortly after birth, the lungs frequently show amniotic fluid filling the bronchioles and alveoli and actual massive aspiration is more common than is generally supposed. The respiratory disturbances in the newborn may be considered as three distinct, though frequently associated, clinical entities: primary respiratory failure, respiratory obstruction and persistent atelactasis. The conditions interfering with the establishment of normal respirations are discussed. These include abnormalities of the central nervous system, abnormalities of the lungs and mechanical compression of the lungs. As the basis for this report a series of fifty bronchoscopies performed in newborn infants was reviewed. The indication in all instances was clinical evidence of respiratory distress persisting in spite of the usual methods of conservative treatment. It was at once evident from this study

that bronchoscopy produces little if any shock in the newborn infant, providing instrumentation is done gently and rapidly with proper size bronchoscopes. No cases of laryngeal edema developed in this series. Death occurring in 15 cases was found on postmortem examination to have been caused by cerebral hemorrhage (5), congenital defects (3), pneumonia (2), and prematurity (5). In the 35 surviving infants, 20 cases showed varying amounts of obstructing secretions and in 6 cases thick stringy plugs of secretion were found blocking a main bronchus. In 1 case, a web was discovered almost completely blocking the mouth of the left main bronchus and in another a thin subglottic diaphragm was present. One case showed a complete paralysis of the left vocal cord. A case of tracheoesophageal fistula successfully closed surgically on the third day of life was included in the series because of the important role played by bronchoscopy both before and following operation. This case emphasizes the usefulness of bronchoscopy in conjunction with certain surgical procedures in the newborn. In the opinion of the authors bronchoscopy is indicated in selected cases of respiratory obstruction and atelectasis which fail to respond to conservative treatment. In such instances, we believe, it may not only prove to be lifesaving but, by removing obstructions from the tracheobronchial tree, may reduce the complications from persistent atelectasis in the neonatal period. 9 references.—*Author's abstract.*

Bronchoscopy in Pulmonary Tuberculosis. A Study of Postbronchoscopic Increase of Disease. *E. Osborne Coates, Jr., Trudeau Sanatorium, Trudeau, N. Y.* Am. Rev. Tuberc. 58:412-20, October 1948.

There is little information on the frequency of progression of pulmonary tuberculosis after bronchoscopic examination of the bronchial tree. A series of 473 bronchoscopies were done on 233 patients with pulmonary tuberculosis. The incidence of increase of disease in the two months following bronchoscopy was no greater than that in a two month period preceding bronchoscopy. The reports of roentgenograms were used as the basis of comparison. Findings in 73 bronchoscopies followed within two months by roentgenographic increase, as compared to findings in 400 cases without such a postbronchoscopic increase, showed basically the same percentage of active endobronchial tuberculosis in the two groups. In a series of 59 patients with roentgenographic signs of increase of disease within two months after bronchoscopy, the percentage of cases with well advanced disease was no greater than in the remaining 174 patients who had no such postbronchoscopic increases. The influence of disease progression before bronchoscopy on events directly following bronchoscopy was studied in a series of 149 patients examined only once; 35 of these patients showed roentgenographic signs of progression within two months before bronchoscopy, 114 did not. In these two groups the incidence of roentgenographic increases in the two months after bronchoscopy were essentially the same. 13 references. 4 tables. 1 figure.

Traumatic Bronchial Rupture with Occlusion. *Philip J. Hodes, Julian Johnson and Joseph P. Atkins, Hospital of the University of Pennsylvania, Philadelphia, Pa.* Am. J. Roentgenol. 6 :448-59, October 1948.

Tears in the main stem bronchi at or close to the bifurcation of the trachea may result from severe chest injuries. The patient suffers shock, dyspnea, anoxia, interstitial emphysema and cough. Although death usally results, there are survivors and they develop posttraumatic bronchial occlusion with pulmonary collapse. Chest roentgenograms following the injury may show fractured ribs, interstitial emphysema, pneumothorax, pulmonary compression and mediastinal shift. The classic roentgen signs of pulmonary collapse are seen when bronchial occlusion is complete. A cup-shaped blind pouch is revealed by bronchograms at the site of the occlusion. Patients with occlusion commonly have substernal distress and dyspnea. About 32 patients with bronchial tears are recorded in the literature, 10 of whom survived the immediate injury. In all cases the bronchial defect lay just adjacent to or within a few centimeters of the tracheal bifurcation. Fractured ribs were the rule. The rupture was explained by increased air pressure in the tracheobronchial tree. The most common finding was dyspnea, usually severe and disabling. Cyanosis occurred regularly and some patients had a superficial cough. Shock occurred regularly, and in some cases there was hemorrhage. Anoxia and shock were the immediate dangers. Those who died succumbed within the first day. All survivors developed bronchial occlusion with complete pulmonary collapse, within days to years. In rare instances there were no complaints. Therapeutic pneumothorax was able to relieve the symptoms, especially in patients with high negative intrathoracic pressures in the affected hemithorax. Four patients were much improved by pneumonectomy. Roentgenographically, bronchial occlusion was characterized by complete collapse of the homolateral lung and marked changes in the alignment of the mediastinum. The collapsed lungs never became infected. All efforts must be directed to control shock and hemorrhage and care taken to prevent tension pneumothorax from developing. Insertion of a catheter into the pleural cavity by an interrib trochar with constant suction of 10 cm. of water may be lifesaving. Occlusion may be prevented by successive bronchial dilatations and bronchoscopic aspirations. Thoracoplasty may prove to be effective when traumatic bronchial occlusion can be established. A case history of an occluded bronchus resulting from trauma in a 36 year old male is presented. The patient was improved by pneumonectomy. 18 references. 7 figures.

Bronchial Carcinoma. *R. C. Brock, Guy's Hospital and Brompton Hospital, London, England.* Brit. M. J. 4581:737-39, Oct. 23, 1948.

A plea is made for physicians to develop a consciousness of bronchial carcinoma in order that any departure from normal in a patient of cancer age may be investigated thoroughly for the possibility of malignant disease. Since the life expectancy of such patients is only six months valuable time must not be lost in arriving at the diagnosis if the patient is still

to be in the curable phase. The most significant and common early symptom is a cough, frequently a dry and unproductive one. Pain and dyspnea may appear, the pain being either pleuritic in type, a dull ache or a heavy unpleasant sensation. Daily or almost daily blood-stained sputum is near to being diagnostic. Frank hemoptysis is less common than streaking or staining of the sputum. The next most important group of symptoms are those caused by infection. These infections usually follow obstruction to a lobar or segmental bronchus and are often diagnosed as influenza or pneumonia. Frequently wasting, anemia and deterioration of the health occur only when the infection behind the growth is well entrenched or chronic. In elderly patients, particularly, the initial symptoms may be a vague deterioration of health, loss of weight, anemia and loss of strength and lung symptoms if not absent may be so trivial that the lesion is recognized only in the course of an examination or if a search is made for it. The only physical signs highly suggestive of malignancy, discernible with a stethoscope, are gross dullness not caused by fluid and stridor produced by partial bronchial occlusion. Careful palpation of the supraclavicular glands is indicated. Involvement of the axillary glands occurs less often. Radiographic study affords the best means of early detection in the majority of cases but even if the findings are obscure, they should make further investigation mandatory. The next step is bronchoscopy. If the diagnosis is still uncertain, examination of the sputum for malignant cells by Dudgeon's (1936) wet-film method may be helpful. Esophageal narrowing or distortion should be excluded by barium examination. Thoracotomy may be needed to establish the diagnosis; it offers the last logical clinical examination since operability may also be assessed at this time. Between 1941 and 1947, 666 cases of bronchial carcinoma were seen. Thoractomy was offered to 131 patients and accepted by 125, of which 50 were found to have an inoperable growth. Of the remaining 75 patients, 63 were treated by pneumonectomy and 12 by lobectomy. For the entire seven year period, the average operability rate was 11 per cent but in the last three years of the period, this rate was 16.5 per cent. Lobectomy is used only in properly selected cases. These patients are elderly, present a peripheral or parenchymatous type of growth and have an apparently clear hilum. The usual treatment of choice is an intrapericardial, block-dissection pneumonectomy. Here the pericardium is opened widely and that part of the sac surrounding the hilar structures is removed with the lung. There follows a complete block dissection of all the accessible mediastinal glands from the superior thoracic inlet down to and including those in and about the main bronchi and continuing down to the level of the diaphragm. As yet sufficient time has not elapsed for determining whether this block dissection is more effective than the less radical operation. Of the 101 patients treated by either lobectomy or pneumonectomy, 55 are now alive and well (1 for over nine years; 3 over seven; 2 over six; 2 over five; 10 over three; 7 over two; 11 over one; 19 under one year). 9 references.

ESOPHAGOLOGY

Progress in Esophagology. *Paul H. Holinger, Chicago, Ill.* Arch. Otolaryng. 47:119-26, February 1948.

Progress in esophagology in many respects has been dependent on and parallel to the progress in esophagoscopy. The progress of esophagoscopy is measured to a great extent by the development of new instruments. The primary indication for esophagoscopy at one time was foreign bodies. At present, diagnostic problems constitute the principal indication for esophagoscopy preceded by fluoroscopic and roentgenographic studies. Roentgen findings often may be negative in the early stages of disease. The patient with esophageal symptoms also requires general medical studies. Such local symptoms often indicate systemic disease. One of the most gratifying phases of esophagoscopy is dilation of the cardia, performed with endoscopic, pneumatic, hydrostatic or mercuric bougies in cases of cardiospasm. The management of foreign bodies illustrates the advances in esophagoscopy. A mortality rate of 25 per cent from foreign bodies has been reduced to under 0.5 per cent. Esophagoscopy is important in children by whom nonopaque foreign bodies have been swallowed. The greatest progress in esophagology has been in surgery. Congenital atresias are outstanding illustrations; the latest advance involves direct anastomosis of the upper and lower segments of the atretic esophagus. In atresias acquired through ingestion of caustic agents, recannulation of the esophagus is possible by endoscopic means in most cases; the biplane fluoroscope is also an aid. Cardiospasm responds readily in most instances to simple dilation, bougies filled with air, water or mercury being used in this treatment. Where fibrosis develops with extreme achalasia, surgical anastomosis of the stomach and distal esophagus if feasible. Progress in esophagology may be measured by the history of carcinoma. This disease is attacked by internal and external irradiation and surgical resection. The stomach is freed, brought high in the thorax and, if necessary, anastomosed directly to the cervical esophagus. Resection of the cervical esophagus also is feasible. Anesthesiology has influenced esophagology by making external esophageal surgical procedure possible and by allowing certain esophagoscopic procedures to be done with added safety. Chemotherapy has been an influence especially for periesophagitis lacerations and perforations. The symptoms of organic esophageal disease are primarily those of obstruction. A lump in the throat may be caused by organic disease. Psychosomatic aspects of esophageal symptoms also are important.

Epiphrenic Esophageal Diverticulum Associated with Cardiospasm. Report of Successful Diverticulogastric Anastomosis. *J. Karl Poppe and Ralph Berg, Portland Veterans' Hospital, Portland, Ore.* Surgery 25:231-36, February 1949.

One of the primary objections to replacing an epiphrenic diverticulum in an upside-down position is its failure to correct the patient's chief symptoms, which is ordinarily dysphagia from the associated cardiospasm. This

cardiospasm, advancing to a complete stenosis of the cardia from scar tissue formation, is a frequent complication apparently due to irritation from the associated diverticulitis and esophagitis. This cardiospasm is probably one of the causes for the extremely poor results obtained by resection of epiphrenic diverticula and is responsible for the high incidence of leakage and mediastinitis. The only successful resection which has been found in a review of the literature was done by Barrett in 1933. The majority of the authors advise symptomatic treatment by esophageal gavage and dilatation of the cardiospasm by hydrostatic bags in view of the high mortality associated with resections. The anastomosis of the diverticulum to the stomach, as was done in this patient, was mentioned by several authors but dismissed as extremely hazardous without citing any examples successful or otherwise. This diverticulogastric anastomosis was first proposed by Lotheissen in 1924, but no previous reports of its clinical application have been noted in the medical literature. A 56 year old man had progressive difficulty in swallowing, regurgitation and substernal pain associated with continued loss of weight. Roentgenograms showed a large epiphrenic diverticulum and two smaller ones with an associated cardiospasm. Following the ingestion of soap powder the chest pain increased and a morphine addiction was acquired. Repeated esophageal dilatations were required during the next five years to partially relieve the cardiospasm. An exploratory thoracotomy was performed and the pouch of the diverticulum was sutured in an upside-down position after dissecting it free from extensive adhesions. Relaxation of the cardiospasm by emptying of the diverticulum and relieving the irritation of the diverticulitis and esophagitis did not occur. A second operation was performed and a transthoracic gastroesophageal diverticulum anastomosis was made. The diverticulum was dissected free from the chest wall and returned to a normal position. The fundus of the stomach was brought up through a rent in the diaphragm and anastomosed to the dependent portion of the diverticulum. A three layer anastomosis was made with interrupted fine silk sutures. The outside row consisted of multiple bite tension sutures used to relieve the line of anastomosis from the weight of the stomach. Omentum brought through the diaphragm was then used to further seal the anastomosis. Roentgenograms one year later showed normal function of the cardia with relief of the cardiospasm as well as the passage of barium through the diverticulum which had been reduced in size to a mere fistulous tract connecting with the stomach. 9 references. 4 figures.—*Author's abstract.*

Diverticula of the Thoracic Esophagus. *Herbert D. Adams, The Lahey Clinic, Boston, Mass.* J. Thoracic Surg. 17:639-45, October 1948.

Diverticula of the thoracic esophagus are classified into traction and pulsion types. This paper consists primarily of a discussion and presentation of a series of cases of intrathoracic pulsion type of diverticula. The clinical course and symptomatology are characteristic and are related to a progressive mechanical obstruction of the esophagus producing pain, dysphagia and regurgitation. In the more advanced stages of the obstruction

there is an associated profound nutritional disturbance. The traction type is most commonly seen in the midesophageal region associated with the hilar regions of the lungs and the various inflammatory and malignant lesions seen in this area. They are produced by an extension of an adjacent inflammatory reaction to the wall of the esophagus with traction and outpocketing of the entire thickness of the wall of the esophagus. In this type the sac rarely hangs down in a dependent position in relation to the esophagus and rarely becomes large enough to angulate or obstruct the esophagus and cause symptoms. Surgical intervention is not indicated except in other complications such as periesophageal abscess, stricture or bronchial fistula. An operative approach for the management of these complications is presented. Pulsion type of thoracic diverticula are similar clinically to those frequently seen in the esophagopharyngeal region. These diverticula produce symptoms and nutritional decline of the patient owing to the dependent position of the sac which fills with liquid and food and gradually becomes large enough to produce mechanical angulation and obstruction of the esophagus. Only surgical treatment can be expected to give these patients relief of their serious symptoms. Before the advent of penicillin and the danger of mediastinitis associated with esophageal surgery was eliminated, 3 patients with large pulsion diverticula of the thoracic esophagus were operated upon and a diverticulopexy only was done. The mediastinum was opened, the diverticulum carefully mobilized and the apex of the sac was elevated along the long axis of the esophagus and sutured with fine silk to the pleura at its highest possible point of elevation. This permitted free drainage of the sac and prevented food from accumulating in the diverticulum and producing the obstruction. These patients were all relieved completely. Since penicillin and streptomycin became available these patients now are operated upon by a transpleural resection of the diverticulum in one stage. Five of such resections have been done without mortality or complications, with complete relief of symptoms. The technic is described and this operation is recommended for all patients with symptoms of esophageal obstruction which arises from pulsion diverticula of the thoracic esophagus. 6 figures.—*Author's abstract.*

Esophageal Diverticula. *Richard E. Ahlquist and Maxwell F. Kepl, St. Luke's Hospital, Spokane, Wash.* Northwest Med. 47:493-96, July 1948.

Symptoms of the pulsion diverticulum are related to the accumulation of food within the sac and obstruction to its passage beyond the sac into the esophagus. Diagnosis is usually suspected by the symptoms and confirmed by roentgenogram. Treatment is surgical and may be carried out in one or two stages. We believe the two-stage operation described by Lahey is the most satisfactory in our hands. The anesthesia of choice is regional cervical block. Seven cases are presented in this paper. The first-stage operation consists of dissecting the sac free and anchoring it superiorly away from its previous downward position. The second stage is done eight to ten days later after passing a Levine tube into the stomach. This

sac is dissected free, the neck isolated and a clamp placed on the neck and the sac cut off transversely. The stump is then closed with an in-and-out-and-over suture, the knot being tied on the mucosal side. The Levine tube is left in place for feeding through the tube until the sixth or seventh day. In our series of 7 cases, there were no serious sequelae. The two-stage resections of the esophageal diverticula in these 7 cases have been successful. 3 references.—*Author's abstract.*

Corrosive Esophagitis in Children. *R. V. Platou and G. J. Austin, New Orleans*, La. New Orleans M. & S. J. 101:284-92, December 1948.

The incidence of lye poisoning in the United States as a whole is 14.5 per 100,000 hospital admissions. At the Charity Hospital in New Orleans from January 1942 through December 1947, there were 75 such admissions, an incidence of 39.1 per 10,000; specific for children to age 12, the incidence was 169.2 per 100,000. These patients spent an average of 131 days in the hospital, at an estimated cost of $786.00 per patient. The ages of the patients averaged about 24 months; the proportion of males to females was nearly equal; over two-thirds were Negroes and all were indigents. The corrosive agent in 72 cases was lye; 20 patients swallowed it in solution, while 33 ingested the powder form. For 19 patients, the form of lye was not determined but end-results of therapy indicated that most of these probably ingested the solution. All 75 patients presented ample evidence to justify a tentative diagnosis of corrosive esophagitis. Each case, however, was classified as definite, probable or questionable, dependent upon symptoms of dysphagia, the results of bougienage, esophagrams and esophagoscopy. The quality of diagnosis obtained was reflected by the high number (36) who had only questionable evidence of having any esophageal lesion, indicating a failure of utilization of available diagnostic facilities. In addition to usual supportive measures, treatment consisted of bougienage according to the Salzer and Bokay routines, gastrostomy with retrograde dilatation and esophagogastic anastomosis. Results were classified as satisfactory, unsatisfactory and uncertain. Among 18 patients with definite esophageal lesions, not 1 achieved satisfactory results from bougienage alone; for those with probable or questionable lesions, the results were not quite so poor but therapy, in some instances, was continued for forty months. Of 29 patients upon whom gastrostomy and retrograde dilatation were performed eventually, satisfactory results were obtained in only 13. One patient, failing to improve with either bougienage or retrograde dilatation, was cured by an esophagogastric anastomosis. By any and all forms of therapy, only 33 patients (44 per cent) achieved a satisfactory outcome; in 7 instances the outcome was unsatisfactory, while 35 cases have, as yet, uncertain results. The present study, in addition to revealing a failure to utilize all available diagnostic facilities, would indicate the lack of a comprehensive and integrated treatment plan, the lack of inter-departmental planning and the failure of adequate parental cooperation. With correction of these faults, it is felt that there is sufficient evidence

to indicate that the Salzer and Bokay routines constitute the best method of therapy for all suspected esophageal lesions due to corrosive agents. Gastrostomy is indicated in patients whose esophageal lesions have been neglected, who have the most severe strictures or who have failed to respond to earlier therapy. Consideration of anastomosing procedures should be given early, particularly in those patients who are most apt to become delinquent in follow-up. 10 references. 10 tables.—*G. J. Austin.*

Benign Stricture of the Esophagus. With Special Reference to Esophagitis, Hiatus Hernia, Esophageal Ulcer and Duodenal Ulcer. *Edward B. Benedict and Richard H. Sweet, Massachusetts General Hospital, Boston, Mass.* Gastroenterology 9:618-28, November 1948.

Sixty cases of benign stricture of the esophagus have been analyzed carefully. It had been hoped that analysis of these cases would enable us to state with some degree of assurance that certain groups should be treated by bougienage and certain other groups should be treated by resection but it is evident that there are no hard and fast indications for surgery, because fairly good results have been obtained by esophagoscopy and bougienage in many patients who had duodenal ulcer or esophageal ulcer or both, with benign stricture. Furthermore, since most benign strictures occur in the older age groups and since there has been 1 death and 1 postoperative stricture in 17 surgical cases, it is obvious that this is a major procedure not to be performed lightly for a benign condition. All of these cases were based on esophagitis. Many patients had hiatus hernia or duodenal ulcer or esophageal ulcer in various combinations. Six patients had all conditions. Regurgitation of acid gastric secretions probably plays an important role in the etiology of esophagitis and benign stricture. It is of great importance to differentiate benign stricture of the esophagus from carcinoma by esophagoscopy and biopsy. In the face of persistent symptoms or doubtful roentgen examination, one negative biopsy is insufficient and under those circumstances esophagoscopy and biopsy should be repeated. The biopsy must be obtained from deep within the lumen of the stricture. Bougienage combined with dietary treatment has given satisfactory results in over two-thirds of the cases. If adequate bougienage fails in a good risk patient, surgery is indicated. Because of the inflammatory nature of the disease and the length of the stricture, plastic repair usually is difficult. In most cases, therefore, the operation of choice is resection. 11 references. 5 figures.—*Author's* abstract.

Esophageal Peptic Ulcer (*L'ulcera peptica dell' esofago*). *E. Benassi.* Arch. ital. mal. app. diger. 14:363-85, Fasc. 5-6, 1948.

Six cases of peptic ulcer of the esophagus are reported. Four were cured under rigid dietetic management analogous to the methods used in gastric and duodenal ulcers. Treatment could not be instituted on 1 and 1 died of a bronchopenumonia about a year after the initiation of treatment In this series of cases the symptomatology was fairly constant and in most cases typical. The ulcer niche was located in every case. The exposures were

made at different angles during the swallowing act and immediately afterwards; solid and liquid opaque substances were used. There was usually some evidence of hypermotility in the stomach and duodenum and some hyperactivity of the esophageal walls immediately above and below the niche but no marked evidence of dilatation of the esophageal lumen. 5 figures.

Benign Pedunculated Tumors of the Esophagus. *Raymond C. Beeler, James N. Collins and Marvin F. Hall, Indianapolis, Ind.* Am. J. Roentgenol. 60:466, October 1948.

Pedunculated tumor of the esophagus is rare and may be found unexpetedly on routine examination since the symptoms may be mild or absent in some cases. These tumors originate in the uppermost part of the esophagus because of redundancy and elasticity of the esophageal mucous membrane in this area which is greater there than in any other part. Pedunculated tumors of the upper esophagus are mostly single; multiple pedunculated tumors occur in the middle and distal thirds. Most of the single tumors arise where esophageal diverticula commonly originate. Once a benign tumor forms in this region or a fold of redundant mucosa sags enough, it is dragged downward by peristaltic action with traction of the passing food. Grossly the tumors are smooth, about an inch in diameter, variable in length and may have multiple distal projections. Microscopically most of them originating from the hypopharynx are fibrolipomas. The tumor may become large without causing esophageal obstruction. Obstruction develops when it elongates and approaches the cardia. Pain generally is not present but cardiospasm commonly is associated with long tumors. Tracheal compression occurs in large tumors and there may be dyspnea, without dysphagia. Benign tumor should be considered when there is mediastinal widening in the chest roentgenogram and there are symptoms referable to the esophagus. Small tumors may be silent so that slight abnormality in the passage of barium through the esophagus should lead to a detailed examination. The shadow produced by the mass will be uneven as outlined against the esophageal wall. The area of attachment is identified by marked irregularity in the wall just above the pedicle shadow. Esophageal peristalsis and elasticity are maintained around the filling defect. Diagnosis is facilitated by having the patient take barium and then swallow air (double contrast examination). Esophageal carcinoma is differentiated by its shorter length, greater diameter and rough surface. Extraesophageal tumors are differentiated by showing displacement of the esophagus or eliminating intrinsic growth when the mediastinum holds the tumor. Cardiospasm is ruled out by demonstrating free passage of barium and the presence of a filling defect. Aneurysm, varices and substernal thyroid should also be differentiated. Diagnosis is important because the tumors usually are amenable to surgical therapy. An illustrative case history in a 70 year old man is presented. His chief complaint was a constant feeling of fullness in the neck and upper mediastinum.

The case was diagnosed roentgenographically, the tumor was removed and the patient made an uneventful recovery. 17 references. 2 figures.

Perforation of the Aorta. A Complication of Carcinoma of the Esophagus. *M. C. F. Lindert and Donald Winnik, Wood, Wis.* Am. J. Digest. Dis. 15:378-81, November 1948.

Perforation of the aorta secondary to carcinoma of the esophagus is rare. A review of the literature is presented and a total of 54 cases of penetration of the aorta have been reported. Three additional cases are presented by the authors with a detailed clinical and pathologic description. The pathogenesis of this dramatic complication is discussed and the authors concur with the conclusions of Postoloff and Cannon, who feel that: (1) tumor cells do not invade beyond the adventitia; (2) the vasovasorum may be thrombosed and actual thrombi have been observed in them due to tumor; (3) bacterial infection does not play a significant role. 6 references. 4 figures.—*Author's abstract.*

The Surgical Treatment of Carcinoma of the Thoracic Esophagus, the Technic of Transthoracic Thoracolaparotomy with Esophageal Resection and High Esophagogastrostomy. *Lyman A. Brewer, III and Frank S. Dolley, Los Angeles, Calif.* West. J. Surg. 56:517-28, October 1948.

This report includes a review of the diagnostic features, pathologic considerations and present methods of high esophageal resection and anastomosis in cases of esophageal carcinoma, as well as a discussion of the 23 cases subjected to transthoracic exploratory thoracolaparotomy during the years 1946 and 1947. Transthoracic thoracoabdominal surgical exploration is indicated for patients with esophageal carcinoma provided they can be made suitable candidates for surgery and provided there is no evidence of extension of the tumor. Preparing these patients for surgery is largely a problem of correcting nutritional and vitamin (particularly C and B complex) deficiencies. Gastrostomy for the purpose of preoperative feedings is unwise since this procedure complicates mobilization of the stomach and reduces the amount of stomach available for high anastomosis. Oral sepsis must be eliminated. Antibiotic agents are started two to four days preoperatively except in cases of chronic bronchitis when they are started several weeks postoperatively. The drugs of choice are penicillin, 50,000 units every three hours; streptomycin 1 or 2 Gm. daily; aerosol penicillin, 25,000 units combined with 1 per cent neosynephrin or some wetting agent in four daily doses for productive cough. If pulmonary edema is anticipated in potential cardiac patients, a sodium ash diet is given preoperatively. Careful evaluation of the cardiac status is imperative before surgery. While quinidine sulfate is not used prophylactically for the prevention of cardiac arrhythmias, intravenous procaine during surgery has been used for this purpose. Routine digitalization is not done without some definite indication. Intratracheal ether and oxygen has been extremely satisfactory. When working about the aortic arch and heart, intravenous novacaine tends to reduce cardiac irregularity. The administration of large amounts of saline

solution is avoided prior to blood transfusion which is started at the beginning and continued throughout the operation. A nasal Levine tube is introduced into the esophagus down to the point of obstruction. After the patient is placed on his right side with his back at right angles to the operating table, an S-shaped incision is made beginning at the fifth rib posteriorly, continuing parallel to the spine as far as the seventh rib and then anteriorly along this rib to the anterior axillary line at which point the incision turns downward to the eighth rib. A long segment of the seventh rib from the transverse process to the costal cartilage is removed. The operability of the lesion is determined (without injuring the blood supply) by exposing the esophagus, carefully inspecting the left main bronchus and aorta and examining the abdominal cavity through a horseshoe shaped incision in the diaphragm. If the lesion is resectable, the stomach is mobilized sufficiently to prevent tension on the suture line. The key to this extensive mobilization is the exposure of the left gastric artery and vein. Next mobilization of the esophagus is carried out and esophagogastric anastomosis made, the technic being that of Sweet in which there is an open anastomosis between the esophagus and stomach with a layer closure of interrupted fine silk sutures. The second layer of silk sutures which unites the mucosa of the esophagus through the mucosa of the stomach is the layer upon which the success of the anastomosis depends. Clamps are never placed on the esophageal mucosa at the site of the anastomosis. Usually the stomach can be brought up above the level of the anastomosis and sewed at this point relieving all tension on the suture line. After the Levine tube is pulled up 1½ inches above the anastomosis, the diaphragm is closed about the stomach (penicillin, 100,000 units in abdominal cavity) with interrupted silk sutures (stomach lies posteriorly in esophageal hiatus). Drainage of the pleural cavity is achieved through intercostal tubes in the third interspace anteriorly and the eighth interspace posteriorly, prompt expansion of the lung occurring when these tubes are connected with a simple under water drainage system. Prior to closure of the chest wall, the pleural cavity is washed out with saline solution and the fifth to ninth intercostal nerves are crushed to minimize pain. Postoperative care is directed toward the prevention or treatment of intrathoracic complications. Two deaths occurred in patients who had undergone resection of tumors above the aortic arch. Both showed arteriosclerotic heart disease and auricular fibrillation preoperatively. In a 65 year old man, a mediastinal defect was not closed and pleural fluid accumulated in both pleural cavities. The partial atelectasis lowered the vital capacity to the point where, with the poor cardiac reserve, death ensued. In a 69 year old man, pleural effusion and pulmonary edema were the causes of death. Since only 9 of the 23 patients in this series had resectable tumors, the operability incidence was 36 per cent. Patients with a successful resection of the tumor and an esophagogastrostomy are able to swallow without difficulty, are unaware that the stomach rests high in the thoracic cavity and are able to lead a normal life. 27 references. 10 figures.

Results of Treatment of Cancer of the Esophagus in the Thoracic Region (*Resultats du traitement du cancer de l' oesophage dans la region thoracique*). *J. F. Nuboer, University of Utrecht, Utrecht, The Netherlands.* Ars medici 3:746-51, Oct. 15, 1948.

From September 1943 to September 1948, 68 patients with cancer of the esophagus have been operated upon at the Surgical Clinic of the University of Utrecht. A radical operation was done on 29 of the patients. The percentage of patients with operable tumors is smaller than that reported in the United States, since patients do not seek medical advice early. The site of the tumor influenced the postoperative mortality, which was lowest in the cases in which the cancer was in the lower part of the esophagus and highest in those cases in which the growth was at the level of the arch of the aorta. In an earlier series, the most frequent cause of death was some pulmonary complication; since penicillin became available and has been given preoperatively, such complications have been rare. Recently in cases in which the tumor could not be removed, the author has done a palliative esophagogastrostomy, rather than a gastrostomy. This operation has been done in 6 cases; 2 of these patients died postoperatively because of failure of the suture; 4 patients have been living for six months without any difficulty in swallowing.

Bridging of Esophageal Defect by Pedicled Flap of Lung Tissue. *Rudolph Nissen, New York, N. Y.* Ann. Surg. 129:142-47, January 1949.

This operation was performed on a patient who had a leiomyoma of the middle part of the esophagus, its upper end being at the level of the aortic arch. Since the tumor mass occupied the entire circumference of the esophagus and was partly interwoven with the muscular wall, resection left this area of the esophagus deprived of its muscular sheath. The vascular supply of the denuded part probably was insufficient because of the ligation of two segmental arteries and scar formation in the mucosa resulting from previous biopsies, possibility of necrosis and perforation had to be anticipated. The adjacent upper segment of the lower lobe of the lung was mobilized and wrapped around this portion of the esophagus and a complete cover was thus obtained. The lung was fastened to the muscular sheath of the esophagus above and below the defect by numerous silk sutures. This pedicled graft of lung tissue apparently fulfilled its purpose. There were no signs or symptoms of pleural or mediastinal infection. Esophagogram taken three weeks and eleven months postoperatively revealed a normal delineation of the esophagus with some bulging in the area where the tumor formerly was located. There were no difficulties in swallowing postoperatively. 7 references. 5 figures.—*Author's abstract.*

Spontaneous Rupture of the Esophagus. Report of One Case, with Recovery. *Julian A. Moore and James D. Murphy, U. S. Veterans Hospital Oteen, N. C.* J. Thoracic Surg. 17:632-38, October 1948.

A 33 year old man had an exploratory laparotomy for acute upper abdominal pain. A diagnosis of acute pancreatitis was made. Five years later shortly after eating he had a sudden severe epigastric pain. A laparotomy was performed for a supposed perforated ulcer. No abdominal lesion was found. Roentgen studies later revealed a left hydropneumothorax. Thoracentesis yielded sour smelling fluid with an acid reaction. He was given barium by mouth and placed in a head down position. Roentgenogram showed the barium in the left pleural cavity. Treatment was begun by doing a left thoracotomy. Methylene blue was then given orally and the blue dye was found to be present in the thoracotomy drainage. Jejunostomy was performed by the Wangensteen technic under spinal anesthesia. Three weeks later his condition had improved sufficiently to permit a thoracoabdominal exploration. A rent, 4 cm long, was found in the anterolateral portion of the esophagus just above the diaphragm. The mucosa was everted and healed to the muscular coat. There was no satisfactory explanation for the lesion. Repair was accomplished by an esophagogastroplasty. Convalescence was remarkably smooth. The mortality rate in spontaneous rupture of the esophagus has been reported as approaching 100 per cent. The authors believe that an early diagnosis followed by thoracotomy, jejunostomy and later repair may save some of these patients. 6 figures.—*Author's abstract.*

MISCELLANEOUS

Unusual Reaction to Penicillin in Oil and Wax. *Clarence E. Burt and Sheldon M. Caplan, St. Luke's Hospital and Union Hospital, New Bedford, Mass.* New England J. Med. 238:804-805, June 3, 1948.

A case of acute early and delayed reactions to penicillin in beeswax and peanut oil is reported in a 29 year old man who had a furuncle of the left nostril which had commenced the day before and rapidly increased in size. The only treatment he had received was hot compresses. The past history was negative except hypersensitivity to ragweed which had been controlled by densitization and antihistaminic drugs. The furuncle was in the left nostril, about the size of a small lima bean and extremely tender. The temperature was 99.2 F. An intramuscular injection of 300,000 units of penicillin in oil and beeswax (Romansky) was given in the middle of the left thigh. Some local pain developed soon afterwards and the entire area down to the knee had become tender to the touch and painful on motion six hours later. It was so sensitive three hours later that the weight of a blanket caused pain and motion was impossible. The temperature was 99.6 F. and there was headache and malaise but no sign of tissue damage nor change in size or contour of the part. Treatment was bed rest, ice packs and salicylates. Pain was less the next day and

some motion was possible. There was a serous exudate in the left knee joint. An injection of 100,000 units of crystalline sodium penicillin G in aqueous solution was given in the right buttock because the furuncle continued inflamed. No hypersensitive reaction occurred and the injection was repeated the following day. Symptoms gradually disappeared except that the left knee tired on walking. The furuncle healed the fifth day. A pruritic urticaria developed over the entire area nine days after the initial injection and exudate reappeared in the left knee joint. The pruntus was controlled by pyribenzamine in 50 mg. doses. The left thigh was 3 cm. larger than the right the next day and the skin on the front of the thigh was thick and doughy. There was slight pain. The left ankle became swollen three days later. All edema disappeared four days afterwards, only a small, nonindurated red spot remaining at site of the injection in the right buttock. Further questioning of the patient revealed the fact that the left knee joint became edematous for several days at least once every summer during the seasonal ragwood allergy. An etiologic source may therefore have been the presence of ragwood pollen in beeswax. Another possible cause was an early serum-sickness type of reaction to penicillin. 7 references.

Part I. Allergy in Otolaryngology. *French K. Hansel.* Part II. The Allergic Investigation, History Taking, Skin Testing and Diagnosis. *W. Byron Black, Kansas City, Mo.* Part III. Allergy in Otolaryngology. Allergic Management-Treatment. *Rea E. Ashley, San Francisco, Calif.* Laryngoscope 58:652-97, July 1948.

An outline of various problems confronting the otolaryngologist from the allergic standpoint is presented. About 90 per cent of patients complaining of sinus trouble have allergy. Diagnosis is based upon rhinoscopic findings and smears of nasal and sinus secretions. The former should be correlated with the symptoms. The mucosa in nasal allergy is boggy and swollen but the color may be pale, grayish, approximately normal or reddened. The best stain for smears is an eosin-methylene blue stain developed by the author. This remains stable for some time, specimens do not fade and only one minute is required. Individual interpretation must be correlated with clinical facts in interpreting smears. It is therefore preferably done by the clinician. Cytologic findings are best interpreted as plus or minus 1, 2, 3 and 4 eosinophils and/or neutrophils. The type of specimen must also be considered. Roentgenographic findings are important in determining the need for surgery in sinusitis but they must be carefully correlated with the clinical history. Bacteria are also important in determining the presence of acute or subacute infections. Vasoconstrictor nose drops are used less in the management of the nose and paranasal sinuses as their continued use, especially the synthetic preparations, tend to cause irritation with aggravated symptoms. Oral administration of ephedrine-like compounds is better with the possible addition of antibiotic or sulfonamide peparations locally or parenterally, the latter being generally more effective. Inability to breathe through the nose is the worst symptom and may result from a swollen mucosa, polyps or a deflected septum. These may

be relieved temporarily by drugs or surgery but adequate allergic treatment is necessary for more lasting relief. Skin tests are important diagnostically in allergy but their interpretation must be controlled. Standardization of extracts and more care in the administration and interpretation of the tests are needed. The technic is described. Satisfactory treatment of allergic eye, ear, nose and throat conditions depends upon accurate diagnosis and both general and immunologic treatment. Allergy may be very selective in the tissues affected. Negative skin tests therefore do not necessarily rule out respiratory allergy. Treatment consists of improving the general health, eliminating the offending allergen, use of some drugs, conservative surgery and hyposensitization. Local treatments such as nose drops, sprays, inhalers, etc. are stopped. Contact with animals and birds is eliminated as much as possible. Symptoms are often much relieved if the patient can be kept comparatively free from dust while sleeping. Woolen rugs, blankets and clothing are avoided. Only unscented soaps and nonallergic cosmetics should be used. Smoking or contact with smokers is avoided. Foods to which the patient is known to be hyposensitive should be prohibited. Certain drugs such as adrenalin and ephredine, atropine, Benadryl and Pyribenzamine or similar preparations are used as palliative but not curative measures. House dust is the most common inhalant causing nasal allergy. A good composite stock dust extract is usually the most satisfactory though an autogenous extract occasionally is necessary. The most important factor in producing hyposensitization is establishment of the proper size dose. The dose is started in accordance with the symptoms, more severe symptoms receive smaller doses. Food sensitive, hay fever and asthmatic patients are especially sensitive and require smaller than average doses. The dose should be maintained at its effective point and not increased with satisfactory relief. Treatment should not be stopped until the patient has remained free of symptoms for three twenty-one day periods. 35 references.

The Practical Anatomical and Surgical Considerations for Exposure of the Facial Nerve. *Frank D. Lathrop, Boston, Mass.* Laryngoscope 58:743-60 August 1948.

The facial nerve bears an undeviating relationship to the horizontal semicircular canal, the latter marking the superior limit of the vertical portion of the nerve. The tip of the short process of the incus in the fossa incudis is a landmark when the horizontal canal is obscured or lost. Where the digastric ridge and posterior bony canal wall meet marks the stylomastoid foramen and denotes the inferior level of the facial nerve. The vertical segment of the nerve may be determined by visually connecting the eminence of the horizontal canal with the point where the digastric ridge and osseous external auditory canal blend. The anterior extension of the intratympanic part of the nerve is given by the point where the tensor tympani tendon is given off from the processus cochleariformis. The

pyramidal part of the nerve is in relationship with the inferior surface of the horizontal canal, being slightly medial to the prominence of the canal. Emerging from the stylomastoid foramen, the nerve enters the posterior border of the parotid, lying on or just lateral to the styloid process which is a landmark. In the parotid the nerve lies between the larger superficial and smaller deep lobe; in the parotid the nerve divides to temporofacial and cervicofacial portions which lie on either side of the isthmus connecting the two lobes. The division is medial to the anterior border of the external ear lobule. The temporofacial division emerges from under the superficial lobe at its anterior and superior margin in relation to the zygomatic arch and parotid duct. The zygomatic or buccal branch runs transversely above the parotid duct. The cervicofacial branch emerges at the lower pole, from which the mandibular branch runs along or just under the body of the mandible. The nerve runs along or just under the body of the mandible. The nerve is picked up in its vertical course through the mastoid, as it emerges from the stylomastoid foramen. The nerve may be exposed also in the stylomastoid foramen and the inferior end of the fallopian canal from within the mastoid cavity. In this approach, the digastric ridge is the guide. Where the ridge meets the posterior wall of the external auditory canal marks the inferior end of the fallopian canal and stylomastoid foramen. The pyramidal section of the nerve is exposed by using the horizontal semicircular canal as a guide. The intratympanic segment is accessible after radical mastoidectomy. It is round elevation running across the upper limit of the tympanic cavity just inferior to the anterior end of the horizontal semicircular canal and surgical dome of the vestibule. In the neck and face, the stylomastoid foramen is a focus for further exposure, by removing the tip of the mastoid process. The buccal branch maintains a close relationship with the parotid duct. The branch is located as it runs slightly superior and parallel to the duct just anterior to the border of the gland. 5 references. 10 figures.

Announcements

The Auralgan Research Division of the Doho Chemical Corporation now offers a visual education in otology through the medium of nine 16 mm. sound and color teaching films and a set of 36 colored lantern slides. Both films and slides are made under competent specialist supervision. The films accurately depict the anatomy of the ear as seen by the otologic surgeon and various acute clinical conditions such as catarrhal and suppurative ear lesions, otitis media in pediatrics, acute mastoiditis, chronic otitic purulencies, etc. with otoscopic appearances, operative procedures, postopera tive care, complications, etc. Their latest film, "The Function of the Ear in Health and Disease" is especially spectacular. The lantern slides also show the anatomy and acute and diseased conditions of the ear. These

films are available without charge to physician study groups, university instructors, hospital staffs, and accredited medical societies. It is required however that at least 20 doctors be present for showing. The films cannot be used with silent projectors but projector sound equipment, screen and attending operator are also supplied without charge if local sound equipment is not available. Because of the demand, request for booking any of these films should be made to the Auralgan Research Division, 100 Varick St., New York 13, N. Y. at least three weeks in advance of expected showing and alternate dates indicated when possible. Slides should be requested at the same address but no equipment is provided for their showing.

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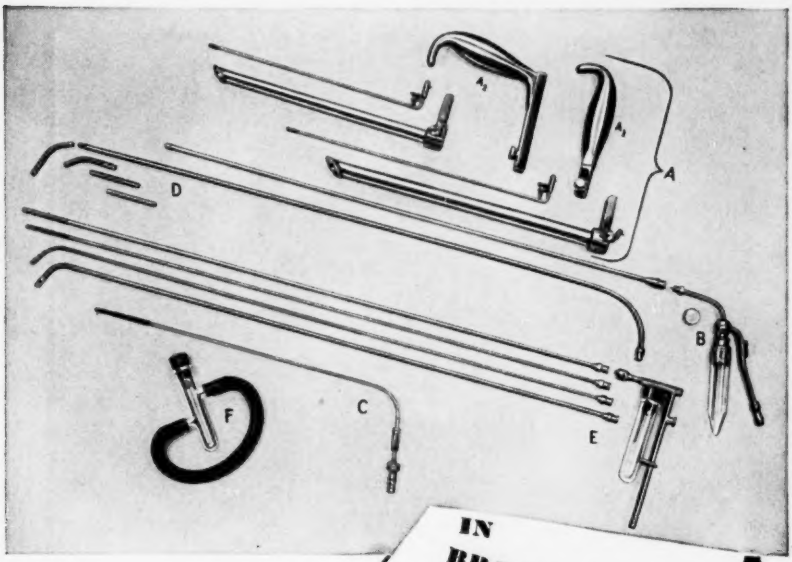

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